OHIO STATE UNIVERSITY
NOV 19 1929
LIBRARY

FIRE ENGINEERING

A consolidation of FIRE AND WATER ENGINEERING and THE FIRE ENGINEER

The Journal of the Fire Protection Profession

NOVEMBER 13, 1929

EUREKA
FIRE HOSE

When the pumps start humming, you can count on every length of Eureka to give unfailing service. —

Eureka Fire Hose Manufacturing Company
50 CHURCH STREET, NEW YORK CITY
ATLANTA BOSTON CHICAGO COLUMBUS DALLAS DENVER DES MOINES DETROIT
KANSAS CITY LOS ANGELES MINNEAPOLIS NEW YORK PHILADELPHIA SEATTLE SYRACUSE

The NEW FRAME...

...backbone of the MASTER SERIES American-La France apparatus

"Unseen values" on motor fire apparatus mean a great deal to you and your department. The frame used in the new Master Series American-La France apparatus is one of the unseen—but vitally important—improvements on the new American-La France line.

The new frame is of the "fish-belly" type, 8 inches deep on pumpers, and 9 inches deep on city service trucks and aerial trucks. It is built of heat-treated pressed steel—the finest and strongest frame ever used on motor fire apparatus. The new design provides strength where strength is needed.

Write for complete information on the New line of American-LaFrance apparatus. American-LaFrance and Foamite Corporation, Engineers and Manufacturers, Dept. A-46, Elmira, N. Y.

AMERICAN-LA FRANCE AND FOAMITE PROTECTION
A Complete Engineering Service
For Extinguishing Fires

Hospitals . . Schools . . Factories . . Railroads Office Buildings . . . Department Stores Arsenals . . Motion Picture Studios . . Hotels . . Etc.

Should All Have Modern and Dependable Alarm Systems

Up-to-date chiefs realize the safety of life and property often depends upon the operation of the private fire alarms that supplement their municipal systems. They, therefore, use their powers and influence to see that institutions of the above type install dependable fire alarm equipment.

We manufacture a complete line of FARADAY INDUSTRIAL FIRE ALARM APPARATUS, as well as municipal, that you can recommend for private fire protection systems as

"THE BEST THAT MONEY CAN BUY"

A Few Typical Private FARADAY Fire Alarm Installations

Park Central Hotel, New York City
Iona School for Boys, New Rochelle, N. Y.
Frankford Arsenal, Philadelphia, Pa.
R. H. Macy & Co., Dept. Store, New York City
State Bank Bldg., Albany, N. Y.
Hotel Astor, New York City
N. Y. Central R. R. & Office Building, Buffalo, N. Y.
Stuyvesant Hospital, Brooklyn, N. Y.
Mayflower Hotel, Washington, D. C.
U. S. Appraisers' Stores, New York City
Y. M. C. A., Philadelphia, Pa.
N. Y. Central Office Building, New York City

Our Catalog No. 46 gives complete information on all types of **Industrial Fire Alarm Systems and Apparatus.** It is a book every municipal and industrial fire official will find of real interest and value. It should be in your reference library.

May We Send You a Copy?

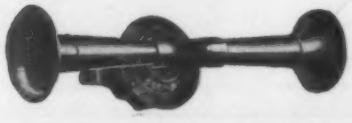
Catalog 47 on FARADAY Municipal Alarms Also Sent on Request

Stanley & Patterson

Incorporated—Established 1884

150 Varick St., New York

Manufacturers of Electric Signaling Apparatus of Every Description



The Journal of the Fire Protection Profession Since 1877

MEMBER
Audit Bureau of Circulations
Assoc. Business Papers, Inc.

FIRE ENGINEERING

A Consolidation of FIRE AND WATER ENGINEERING and THE FIRE ENGINEER

Published Every Other Wednesday

SUBSCRIPTION PRICE
U. S. and Canada $3 a year; Foreign $4; Single copies 25c

Issued by CASE-SHEPPERD-MANN PUBLISHING CORPORATION
225 West 34th Street, New York City
Also publishers of "Water Works Engineering," Technical Books, etc.

KARL M. MANN
President and Advertising Director

FRED SHEPPERD
Managing Editor

I. HERBERT CASE
Vice-Pres. and General Manager

H. S. ESSEX, Advertising Manager; ROBERT H. LOCKWOOD, Editor; N. N. WOLPERT, Asst. Editor
HAROLD T. MURRAY, Vice-Pres. and Western Manager, 30 N. Michigan Ave., Chicago, Ill. Telephone Franklin 0138

EDITORIAL ADVISORY BOARD

JOHN KENLON
Chief, New York Fire Dept.
Founder of New York Fire College

JOHN C. MORAN
Chief, Fire Department
Hartford, Conn.

GEO. J. KUBS
Former Deputy Chief N. Y. F. D.;
Lecturer on Fire Fighting, Delehanty Institute, N. Y.

A. A. BELL
Chief of Fire Brigades and Engineer "American Fore" Group of Fire Insurance Cos.

Let's Get Ready!

THE program to definitely establish the leadership of the International Association of Fire Chiefs in all fire matters, as outlined at the Birmingham Convention by Chief Ralph Scott of Los Angeles, newly-elected President, has been received with a great deal of enthusiasm by fire chiefs everywhere.

¶ Under this proposed plan, which calls for the cooperation of all factors concerned with problems of fire-fighting and fire prevention, the fire chiefs play second fiddle to no one, and rightfully so.

¶ It's now up to every fire chief to get his store of knowledge into apple-pie order, put his shoulder to the wheel of progress and show the wide-world that he can more than measure up to this tremendous responsibility.

¶ You can count on FIRE ENGINEERING to do its part in keeping you closely in touch with every phase of these new developments, and fully informed on everything else that you, as a progressive fire chief, should know.

Let's Go!

The Publishers

CONTENTS

VOL. LXXXII No. 23

NOVEMBER 13, 1929

Advantages of Mutual Aid Between City Fire Departments, by Chief James J. McMillan (Portrait) 1037
Such a Plan, Systematically Arranged, of Great Help in Time of Emergency.

Fighting High Fires From Below (Illustrated) 1039
The Only Method of Approach at Fires in the Upper Stories of Skyscrapers.

Fighting Fires in Icy Weather, by Chief D. A. Boulden (Portrait) 1041
Caution Needed in Answering Alarms—Handling of Frozen Lines.

The Round Table 1043
What are the Rules of Your Department Regarding the Speed of Apparatus when Responding To and Returning from Fires?

With the Editor 1045
Comments on Current Events and Live Topics by Our Editorial Staff.

Questions and Answers 1047
Replies to Questions on All Manner of Subjects of Fire Fighting and Fire Prevention.

Recent Important Fires Specially Reported (Illustrated) 1049
Two Firemen Killed at Worcester, Mass., Fire—Burnings of Two Weeks.

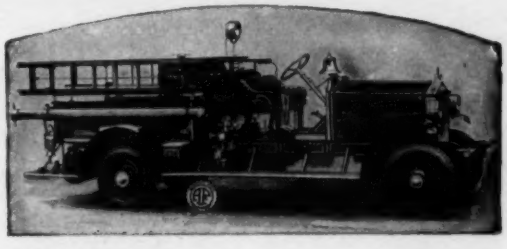
Fire Department Activities 1061
Newsy Notes from All Over the Country with Matters Firemanic.

Fire Department Improvements 1062
Record of Business Activities in the Fire Protection Field.

False Alarms 1064
The Humorous Side of the Fire Protection Profession.

Contents of this issue copyrighted, 1929, by the Case-Shepperd-Mann Publishing Corp., 225 W. 34th St., New York City.
Entered as second class matter April 15, 1929, at the Post Office at New York, N. Y., under the Act of March 3, 1879.

"Nothing is too good for fire service, and only the best will do." Ahrens-Fox.



You Can Now Get Modern Ahrens-Fox Quality Apparatus for Every Need

The addition of rotarystyle pumpers to the Ahrens-Fox line, *now* makes it possible for the *smallest towns* as well as the *largest cities* to have the *dependable* fire protection that is provided by modern Ahrens-Fox apparatus. The up-to-date Ahrens-Fox line now includes:

Piston Type Pumpers and Combinations

for cities that want the very finest apparatus and need large capacity pumping units. Famous for dependable service.

Rotarystyle Pumpers and Combinations

for service where large capacity pumps are not needed and where limited funds will not permit Ahrens-Fox piston pumpers.

The Skirmisher

is a special combination of pumper, ladder truck, booster and hose carrier that is ideal for small towns and outlying sections of large cities.

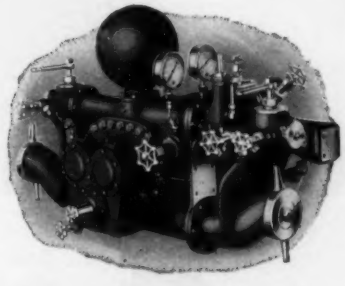
Aerial Ladder Trucks *Four Wheel Ladder Trucks*

Tractor-Trailers of Non-Aerial Type

The present day problems of fire fighting are so exacting that every fire chief deserves and should demand the assistance of the very best apparatus money can buy . . . apparatus that is especially designed by experienced fire apparatus engineers to meet the particular problems of the town or city making the purchase.

This is exactly the kind of apparatus you get when you select Ahrens-Fox equipment, so send *now* for complete information on the full Ahrens-Fox line and be sure to give this information your most careful consideration before you place any orders for new apparatus.

Do You Want All the Facts?



The New Rotarystyle Highly Efficient Pumping Unit

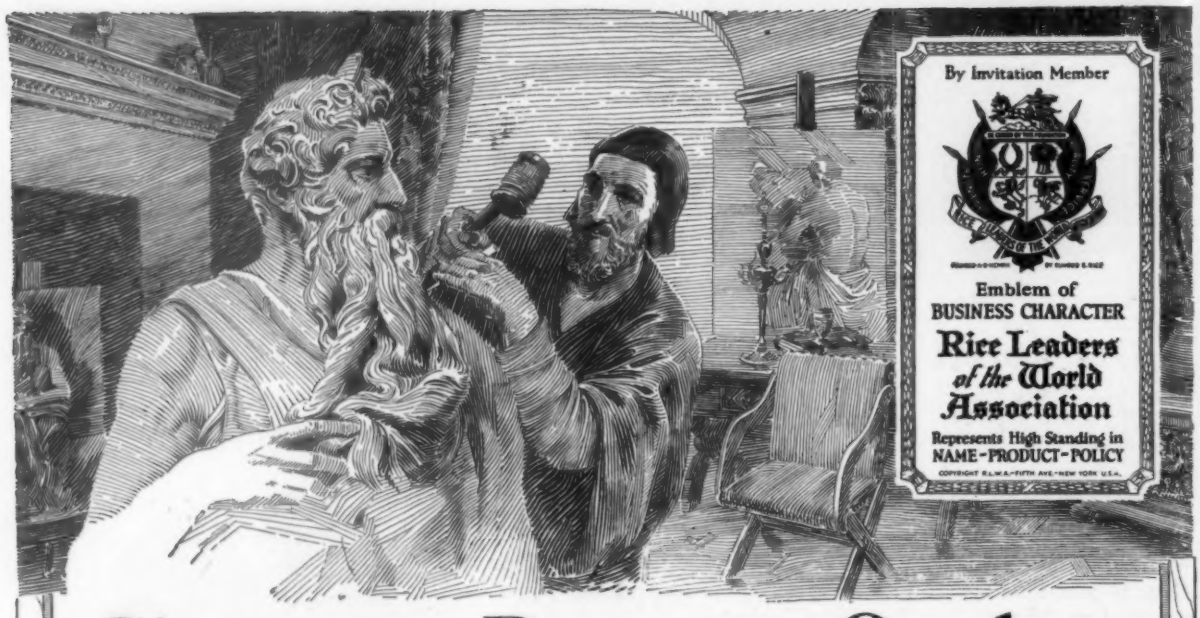
AHRENS-FOX CINCINNATI OHIO U.S.A.

This Trade Mark is Your Guarantee of Highest Quality in Design, Materials and Workmanship.

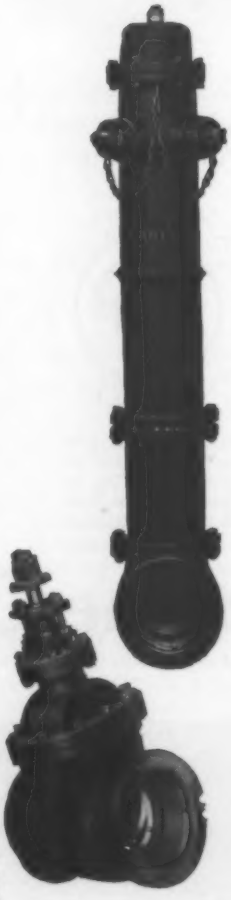
The Ahrens-Fox Fire Engine Co.

"Builders of Quality Fire Apparatus"

Cincinnati Ohio



Character Protects Quality



Your best warrant of the Quality of ANY merchandise is the character of those who make it.

Take Michelangelo for example. If a statue or painting failed to meet his exacting standard of quality, he abandoned the work or destroyed it.

Thus men of integrity always protect the quality of their products.

In the manufacture of "DARLING" Gate Valves and Fire Hydrants, this especially holds true. For here, in our modern factory, there are men of character in every department — men who protect YOU, and protect US, by seeing that high standards of quality are faithfully maintained.

Because of this, and because of the DARLING VALVE & MFG. COMPANY'S long-established reputation, we are "by invitation" members of the Rice Leaders of the World Association. No more conclusive evidence could be offered that a manufacturer combines high grade materials with fine workmanship and straightforward dealings.

Darling Valve & Mfg. Company

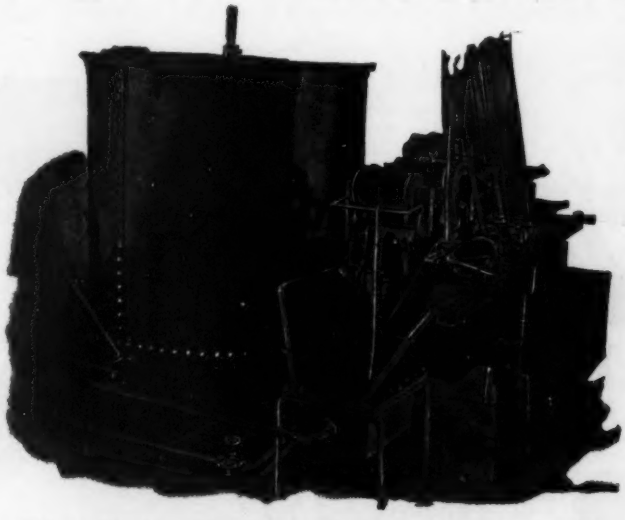
Williamsport, Pa.

New York Chicago
Oklahoma City Houston

DARLING

FIRE HYDRANTS and GATE VALVES

668



This machine is used in our patented process of treating the cotton strands with Wax and Para Gum, making Fabric Hose absolutely waterproof and impervious to mildew and rot.

Fabric Fire Hose

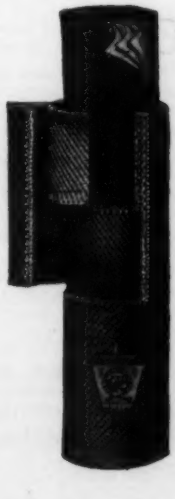
The Wax and Para Gum treated Cotton Rubber Lining in Fabric Hose is so unusual in its construction that we have been asked time and time again just how it is made. Those who have used it have found its wonderful service qualities far above the average hose and felt sure that we must have some special process of manufacture that makes Fabric Hose better. And we have!

Write for our illustrated booklet, "Wax and Para Gum Treated Fire Hose. . . . How it is Made," explaining many other details of Fabric Hose. We shall be glad to mail it to you for the asking.

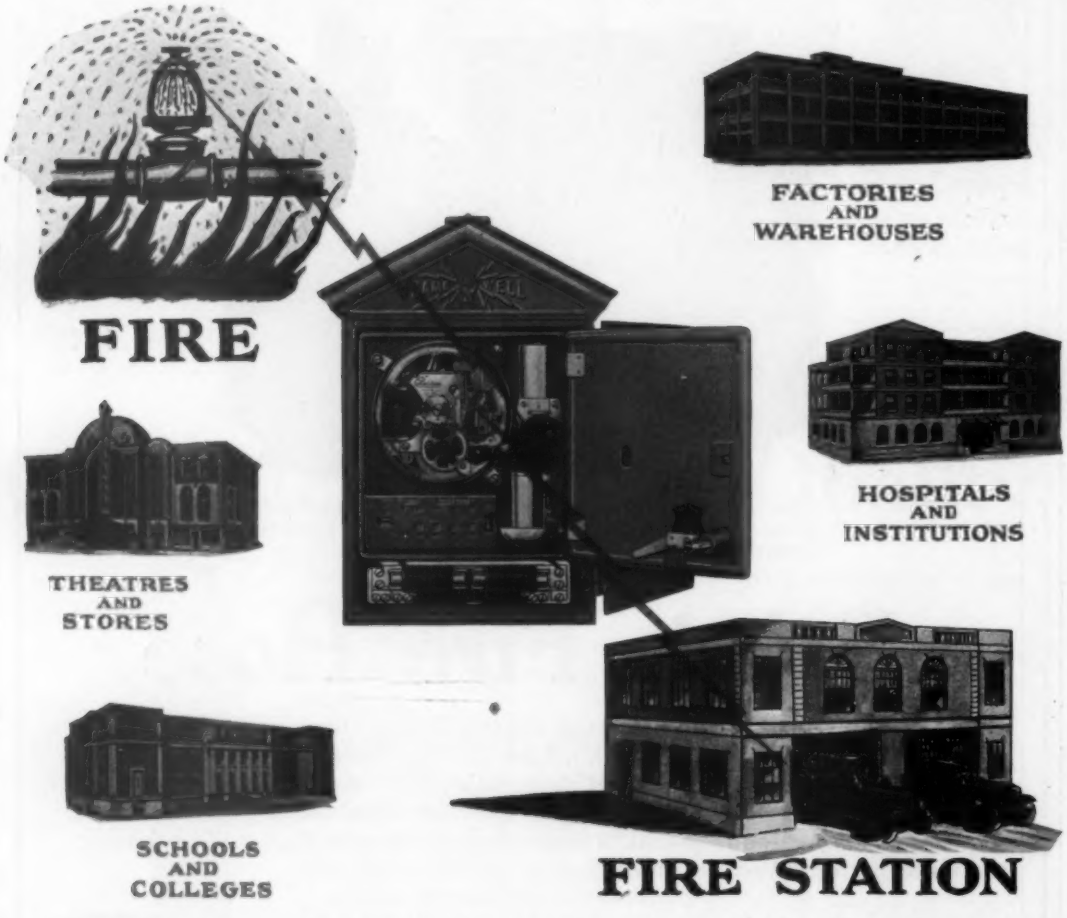
Fabric Fire Hose Co.

9-15 Park Place, New York, N. Y.
124-126 W. Lake St., Chicago

Atlanta Boston Columbus Dallas Binghamton Baltimore Minneapolis Portland San Francisco Los Angeles Newark Pittsburgh



The SPRINKLER WATCHMAN



CONNECTED up with the riser of a sprinkler system, the 1929 Model Peerless Fire Alarm Box *Master Model* makes an efficient *Sprinkler Watchman.*

Such connections in your city will add to the efficiency of your fire department. They notify the fire department as the sprinklers start to operate so that the firemen arrive at a fire while it is still small. Then, should the fire be beyond control of the sprinklers, the firemen can extinguish it. In case the sprinklers have already put out the fire, the firemen can shut off the water and prevent any unnecessary loss from that source.

Fire Chiefs and Superintendents of Fire Alarm in many cities have already recognized the value of such a connection and have recommended it to the business houses, theatres, institutions, factories, stores and other types of sprinkler protected property. Among these cities are:

Fresno, Calif.	Santa Ana, Calif.	Denver, Colo.
Columbus, Ind.	Huntington, Ind.	Maysville, Ky.
Lewiston, Me.	Lawrence, Mass.	Lynn, Mass.
Gardner, Mass.	Binghamton, N. Y.	White Plains, N. Y.
Asheville, N. C.	Burlington, N. C.	Charlotte, N. C.
Cleveland, Ohio	Bethlehem, Pa.	Wichita Falls, Texas
Burlington, Vt.	Newport News, Va.	Norfolk, Va.

In Denver alone, there are 100 or more of these installations, many of which have been in service for as long as ten years.

Insurance interests have also recognized this *Sprinkler Watchman*, and have recommended its installation in various sections of the country; made allowances in rates and in some cases have even allowed factories to dispense with watchmen.

(If you would like a wiring diagram and further details on the *Sprinkler Watchman*, write to our nearest office.)

THE GAMEWELL COMPANY

NEWTON UPPER FALLS, MASS.

"A BOX A BLOCK"

FIRE ENGINEERING

(A Consolidation of Fire and Water Engineering and The Fire Engineer)

The Journal of the Fire Protection Profession

VOLUME LXXXII NOVEMBER 13, 1929 NUMBER 23

Advantages of Mutual Aid Between City and Town Fire Departments

Such a Plan, Systematically Arranged, of Great Help in Time of Emergency—Some Sections that Have Adopted Idea

By CHIEF JAMES J. McMILLAN, Fire Department, Orange, N. J.

THE following paper treats of a subject that is of great interest to Chief of Fire Departments in populous sections where a number of cities and towns are so grouped that they can readily render assistance to one another in time of need. The subject is treated in a practical manner by the author.

Chief James J. McMillan

Mutual Aid, or a cooperative plan of assistance between city fire departments, is a subject to which chiefs have given much thought and study. There is little that may be said against such cooperation between fire departments and a great deal may be said in its favor.

A matter in regard to mutual aid which seems to worry a number of fire department officials is the question of "liability." When a fire department responds to a fire outside the city limits and an accident occurs, legal entanglements are apt to arise.

Another important matter is the standardization of hose threads. This is essential in order that mutual aid may be possible and proved to be an important factor at the Fall River Fire in January, 1928. Had this fire occurred three years previous surrounding cities would have been powerless to help except as some few adapters might have been available, but through cooperative efforts all Fall River couplings on hose, hydrants and equipment were converted to National Standard and thus were made the same as surrounding cities, and the 31 pumpers from the 28 cities and towns which sent apparatus were able to connect to hydrants and to use hose carried on any apparatus. If such standardization had not been accomplished a much more serious conflagration would almost certainly have resulted.

Whether or not a chief at present sends aid to outside points, the problem of "mutual help" is one that must eventually be faced by the chief of every department. While practically all municipalities maintain reasonably adequate fire-fighting equipment, a conflagration might overtax the resources of any one of them, as in the Baltimore fire in 1904 where aid from a large number of cities, even as far away as New York, was required. Similar cooperation was shown by the Long Island fire companies, regardless of political boundaries, in the case of the Garden City oil fire. There are many other instances too numerous to mention, which have occurred throughout the country, where mutual aid has been given to great advantage.

Mutual Aid System in Practice

The following counties, cities and townships have adopted systems of their own which are working very satisfactorily:

Massachusetts: Boston and neighboring cities.

Illinois: Southern Illinois-Egyptian Fire Fighters Association.

New Jersey: Atlantic County: which includes Ocean City. The Oranges and neighboring cities.

The Massachusetts System

Massachusetts: Aid from Boston: By mutual agreement, Boston and the surrounding municipalities assist each other at times of large fires. Boston sends 1 or 2 companies on first alarms from certain boxes in Brookline, Milton, Newton and Somerville, gongs or tappers on the fire alarm systems of these places being installed in the nearest Boston station.

Tappers on the Boston alarm system are installed in fire department headquarters of Brookline, Chelsea, Newton and Milton, and companies from these places, and also from Everett, Quincy, Revere, Watertown and Winthrop go to Boston, on or before a general alarm, part responding to the fire and part taking station in districts adjoining their own cities and towns, where tappers, connected with their respective systems are installed to enable them to answer alarms whether in Boston or in their own districts.

Companies from Brookline, Newton and Milton respond on first alarms to Boston border-line boxes.

Mutual aid agreements exist between the cities of Chelsea, Everett and Revere whereby certain companies, designated on the running card of each city, respond to second or greater alarms of the other cities, either to the fire or to

"WHETHER or not a chief at present sends aid to outside points, the problem of 'mutual help' is one that must eventually be faced by the chief of every department. While practically all municipalities maintain reasonably adequate fire-fighting equipment, a conflagration might overtax the resources of any one of them."

cover in. A register and a tapper is installed in each fire headquarters on the alarm system of each of the other cities and the company designated on the running card is dispatched by the man on watch at fire headquarters, usually by transmitting a preliminary signal over his own fire alarm system.

The cities of Lynn and Swampscott each have alarm instruments of the other city in one or two stations nearest the other city, and these companies regularly respond to first alarms from certain border line boxes the same as to their own boxes. The same arrangements exist between Cambridge and Somerville. Generally only one company of the city rendering aid is affected.

Arrangements are being made for mutual aid between Danvers, Beverly, Salem and Peabody, but have not been completed to date.

How New Jersey Towns Co-operate

New Jersey: Atlantic County has a Mutual Aid System which is working very satisfactorily.

No company in the County other than those specified leave their quarters until they receive the code call from the city requesting help.

In the event of Ocean City (which borders on Atlantic County) or any city of the Atlantic County Association, needing help, they call the Atlantic City Electrical Bureau asking for the ranking officer on duty and give the code word.

A code chart is so arranged that no town will ever be stripped of apparatus, for while most of the apparatus may respond to a fire in some neighboring city, fire companies from other communities cover in.

In Essex County, the Mutual Aid System is still in a state of formation. A committee appointed by the fire chiefs have submitted two plans to a committee composed of Directors of Public Safety, Fire Commissioners, and Chiefs of Fire Departments.

Plan One provides: That each department regularly answer such alarms and "cover in" on certain other alarms of its neighbor, as may be pre-arranged between the individual municipalities.

That a signal code be established which will designate what companies of the different cities are on mutual aid calls, but will in no way conflict with the signals of the running order of any of the departments involved. The foregoing to be printed on a card with a list of the boxes and companies of each department responding; this card to be used by all of the municipalities.

That each fire department be connected to each bordering fire department with one pair of wires, to which shall be connected at each end, an audible signal and a recording and transmitting device, with sufficient battery current supply to operate on a 1/10 ampere, series, closed circuit. This apparatus to be so arranged that all alarms from one department shall be received by the other, and vice-versa.

Plan Two: The second plan of mutual aid offered by this committee proposes that a telephone code of signals be worked out suitable to all. This plan can be arranged like the first plan except that instead of the telegraph systems, the telephone would be used for calling help. Running cards with proper instructions would be necessary so that the operator could send help without the delay or formality of calling anyone in authority for permission. A code word should be used to eliminate the possibility of interference without authority.

Three Persons Killed in Oil Station Explosion

Three persons were killed and another injured when an explosion wrecked an oil station in St. Ansgar, Ia. The cause of the blast is a mystery. The photograph shows all that is left of the building.

Mutual Assistance in Illinois

The Egyptian Fire Fighters Association of Southern Illinois, an organization of more than sixty fire departments, has been organized since July 9, 1925, with Chief Albert Herring of Murphysboro as President. Through the efforts of this organization, the cities of Southern Illinois have standard uniform equipment and are assured of outside aid to assist in fighting any conflagration.

The association has what they term a "Call System," with a running card providing for mutual aid response. The president has a record of the equipment of each member, also of size of hose couplings, size of chemical tanks, etc. When an alarm is sent out over the wires, the president immediately dispatches such equipment to the scene as will be most beneficial. Adaptors are supplied for use where there are non-standard threads.

The association has established a step-up system, whereby a company from the adjoining department will cover the territory vacated by the company which went to the scene of disaster. In this way, no city is left uncovered.

The Egyptian Fire Fighters Association has done noble work in cementing these sixty or more fire departments into one superb organization with the furtherance of a spirit of helpfulness and good-will as its main purpose.

Necessity for Laws

A fire department's authority within the city limits is unquestioned but when working out of town difficulties often arise. Some years ago former Senator Roscoe Conklin, one of the foremost legislators of our country, gave his opinion to the effect that, as respects New York State, only the Governor has the power to order apparatus out of town. In order to be able to aid a neighboring community in distress, there must be laws giving us the proper authority and also providing for the protection of our firemen in case of accident. The authority of a department to send its companies to an out-of-town fire has been questioned and some able counsels have ruled that the present pension laws of some of our states do not properly protect firemen while doing duty outside their own municipalities; while some have ruled otherwise. Consequently, it is necessary that there be state laws governing this point.

New York State has a law, applying to volunteer firemen but which might also be adapted to apply to paid firemen, which provides that any fireman who receives injuries while assisting a neighboring community in the fighting of fire or while on the way to or from such assistance shall be indemnified at the expense of the community issuing the call for assistance and in which the fire occurred. The law also states that any community may insure itself against such liability.

When this point of liability has been cleared up to the various states, mutual aid between cities will advance as rapidly all over the nation as it has already in a few states.

(From a paper read before the annual convention of the International Association of Fire Chiefs at Birmingham.)

New York Firemen to Get Increase

By a majority of almost four to one, New York City, at last week's election, approved the pay increase of firemen and policemen to $3,000 a year for first grade men. This means an increase of $500 a year and it will go into effect on the first of the year.

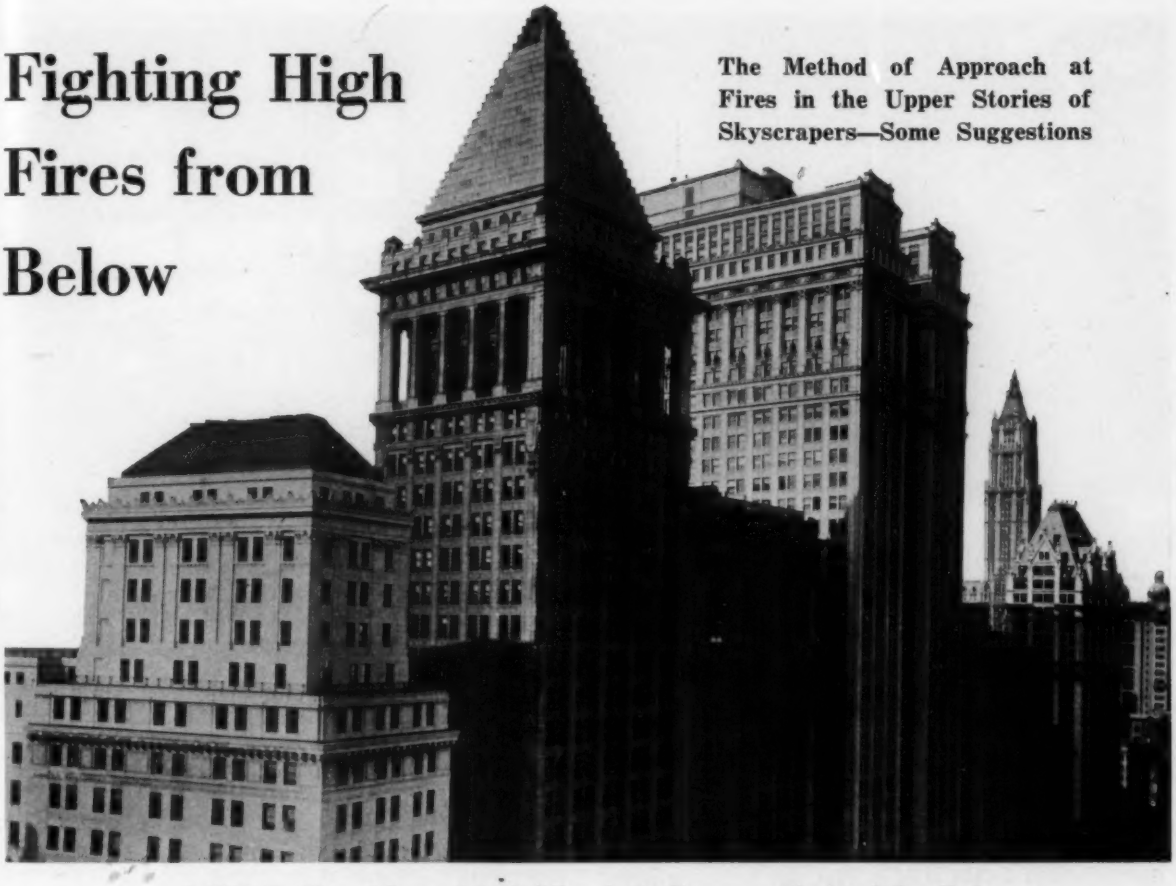
The referendum was authorized by the 1929 Legislature at the city's request despite vigorous opposition of some who believed that the Board of Estimate should grant the increase on its own responsibility. The Citizens' Union which was active in the opposition at Albany also opposed the proposal during the campaign on the ground that the city was "passing the buck," to the voters.

Fire Commissioner Dorman was one of the many who urged the voters to vote "yes" on the question. In anticipation of a favorable response at the polls, the Board of Estimate some time ago inserted in the 1930 budget a $5,000,000 appropriation to provide for the salary increase.

Chemical Car Delivered to Kellogg, Ia.—A chemical car has been delivered to Kellogg, Ia.

Fighting High Fires from Below

The Method of Approach at Fires in the Upper Stories of Skyscrapers—Some Suggestions



A High Up View of Some of the Buildings in the Skyscraper District of New York.

The new set-back laws in force in New York City will result, in the future, in the upper parts of skyscrapers being more remote from each other. The first set-back must be made at a point above the street equal to one and one-half times the width of the street on which the building faces.

IN this age of fire resistant construction, particularly in connection with tall commercial buildings, the question is often asked "why do skyscrapers burn?" The answer is simple: combustible contents.

A survey of any office building of modern design will show a great preponderance of combustible contents ranging from carpets and furniture to vast files of paper documents. This is illustrated very well in one of the pictures in connection with this article which shows the condition of a file room of the new Equitable Building, New York, after fire had been extinguished therein.

As long as combustible furniture, office fittings, and stationery are employed in modern buildings, there will be possibility of such buildings being visited by fire on a large scale.

The average skyscraper represents a very severe fire to handle. This applies to the larger cities as well as the smaller. In smaller cities skyscrapers are usually isolated, which means that there is no method of approach to a fire on one of the upper floors other than by way of elevators or stairwells. In large cities skyscrapers are sometimes adjacent, but the new building laws commonly found in large cities which require that set-backs be provided on tall buildings, result in the towers of such buildings being quite a distance apart. Thus in the future it may be expected the skyscraper problem in the large city will be almost as severe a fire problem as in the medium sized or smaller city.

The problems incidental to handling fires in tall buildings are many. The great height is the underlying cause of practically all such problems. Lofty buildings mean slow work, and plenty of it, in getting streams in operation. While standpipe systems may provide sufficient water for a fire involving one floor, where fire spreads over several floors the standpipe equipment of a skyscraper will not be sufficient to provide the department with enough streams for quickly bringing the fire under control. Hence it is necessary to stretch lines from the street to the floors beneath the fire which means heavy work for a large number of men, to say nothing of the great quantities of hose needed for such operations.

The limited means of approach is an equally serious problem. Very few skyscrapers, particularly the upper floors, can be reached by streams operated from a neighboring building. The greater the height, the greater will be the breeze blowing, and the more difficult will it be to produce streams which will be effective at any great range. An example of this may be noted in the illustration of the Sherry-Netherlands Hotel fire elsewhere in this article. In this case a stream operated from a neighboring building may be seen rising up over one of the lower sections of the fire building, but producing almost negligible results insofar as extinguishing the main body of the fire is concerned.

It may be said that the channels of approach to the average skyscraper fire are from below, and are limited to elevator and stair shafts. Where elevators get out of commission due to the spread of the fire, congested stairwells may result.

Fig. 1. It's the Contents That Makes the Skyscraper Combustible.

Here is the file room of one of the offices in the new Equitable Building in New York after a fire. The building, while of the most modern fire resistant construction, suffered quite a loss on one of the floors, and minor losses on other floors due to fire which originated in one of the vertical shafts.

One of the fundamental rules in fighting a fire is first surround it, but it is evident that this rule is not applicable entirely to skyscraper fires, particularly where the fire is burning on a floor well up in the building and still some distance from the top. It is impossible to cover the fire at the top.

The limited water supply available through standpipe systems is another factor which seriously interferes with efficient operation of the department. Each standpipe has a definite capacity, and thus a definite limit of usefulness. Furthermore, each standpipe has but one outlet on a floor, and thus again its service is reduced. Of course, two streams can be taken from standpipe outlet by use of a Y connection, but even if each outlet were fitted with such connection, we would still have insufficient connections, even were it possible to furnish an unlimited supply of water through the standpipe, to properly handle a spreading fire.

The danger of failure of elevators is always present. History of fire fighting shows quite a number of such incidents where firemen have been trapped due to cars stalling in elevator shafts subsequent to fire reaching the control or power mechanisms.

Congestion in stairwells incidental to fighting a spreading fire is a serious matter. It is one which can be reduced, though not eliminated.

Where the fire is at a considerable elevation, the department will be faced with the necessity of heavy engine pressures due to the so-called "back pressure" produced by the high water columns. Common practice is to allow 5 pounds back pressure for each story of a building. Thus if a fire is being fought on the fortieth story of a structure, the back pressure alone may be taken at around 200 pounds. To this pressure must be added the pressure necessary to overcome friction in hose and in addition, sufficient to produce a good stream at the nozzle. The sum of these three factors may create a pressure at the engine which only the best apparatus is capable of producing. Where large quantities of water are required, several engines may be necessary to deliver such a supply at the desired pressure. Thus again a difficult condition develops which is not encountered at fires in ordinary commercial buildings of moderate height.

The problem of radiation of heat from a fire building is severe where other buildings are in close proximity to the fire building. With very high fires this problem is, however, comparatively mild. On the other hand where a fire may be burning half way up a skyscraper the exposure hazard due to radiated heat may be severe, and may necessitate special action on the part of the department.

Skyscrapers under construction entail several other problems not encountered in finished buildings such as embers, defective water supply, elevators out of service, unprotected openings which constitute both fire and life hazard, and other points which make the operations of the department more difficult.

It is not often that skyscrapers are equipped with sprinkler systems, but where such is the case, a spreading fire may be avoided.

Operating on the Fire

As noted above, the department is usually confined in its field of operations to the floors below the fire floor. Where such is the case, lines have to be stretched from the floors below to the fire floor, and gradually spread out on this floor until this particular part of the fire is brought under control.

In getting streams to work, the standpipe, if in good condition, provides great help to the department. Single

(*Continued on page* 1054)

Fighting Fires in Icy Weather

Caution Needed in Answering Alarms—Handling of Frozen Lines—Saving of Life a Difficult Problem—Caring for the Men

By CHIEF D. A. BOULDEN, Winnipeg, Can.

THE fighting of fires in localities where extreme cold prevails in the winter season is naturally accompanied by the greatest of difficulties. The following paper will be found of great practical value by chiefs who have this condition to overcome.

Chief D. A. Boulden

In the city of Winnipeg the temperature in summer hovers between 90 to 100 degree above zero, and in winter, from zero to 45 below, with a considerable spell of 20 to 30 below. Fighting fires naturally is a hazardous task under these climatic conditions. A discussion of fire fighting must necessarily involve three things:

1. The personnel of the fire fighters.
2. The condition of the equipment.
3. The conditions under which the fire is fought.

I invite you in your imagination to go with me to a fire, see the conditions under which we work, and return to the station after the fire.

Caution In Answering Alarm in Cold Weather

Answering a night alarm, it is impossible for one to conceive, when the temperature is hovering below zero, the oppression caused by the atmosphere. When the doors of the engine-house are opened, the very air seems to challenge your existence, and the street beneath you cracks and groans as though the deep breaths you are taking cause pain and distress; the exhaust of the engines fogs your wake; the pressure drives the smoke down and the streets are deserted. You are in undisputed control, and the paths you take may offer no obstruction, but still danger lurks there. Strict attention must be paid to apparatus and certain precautions taken when responding to an alarm during a fire and also in returning to quarters after a fire.

Care of Apparatus and Tools Important

The care of apparatus, the driving and manoeuvering of them must be in the hands of skilful men; rolling to a fire on slippery streets that are sometimes deep with snow, mean that the men handling these machines must have a thorough knowledge of their task and be able to handle their apparatus no matter what difficulties confront them.

Like all good craftsmen, the fireman's care of his tools must be his first consideration. All engines are clothed with hood and radiator cover; winter lubricants must be used, non-freezing kind, so as to prevent the motors and transmissions from freezing. Immediately pumping engines are closed down, all drains are opened, and upon arriving back in the engine-house all valves are steamed and treated with alcohol. All suction and engine connections are dried off ready for the next call. Engines equipped with deck guns are supplied with heavy canvas to cover the entire front of the apparatus when in action. Deck gun nozzles must be in perfect shape, free from dents or unevenness as a straight unbroken stream casts little or no spray which is essential, as spray from big streams forms ice very quickly.

Difficulties in Fighting Fires in Sub-Zero Weather

Fighting fires in sub-zero weather is extremely hard on firemen, likewise on apparatus, hose and equipment. Men working on fire escapes, ladders and roofs of adjoining buildings are exposed so much that they become caked in ice, and I have made it a practice to have these men relieved at intervals and warmed in adjoining buildings before returning to their positions. When ice-clad firemen return to quarters, it is necessary to use hot water to release the snaps and buckles on their fire coats. Frost bites must be taken care of immediately, and the frozen part rubbed with snow, and as frozen flesh is similar to burns it is necessary to cover the affected part with oil.

Water being the common ammunition, the mains must be below the frost line, and the hydrants well installed and properly cared for, with low and high pressure systems maintained at proper poundage. To know that water is there and plenty of it, is the first great essential.

Handling of Streams in Icy Weather

The handling of streams, more especially those in the streets and lanes, requires great care. When operations commence at a fire in such weather, the layout conditions may be all right, but in a short time the new formation of ice makes any movement dangerous, and firemen are liable to slip and fall who are in control of the pipes. Back pressure will take care of any line properly secured to stick after being in operation a short time as the line will freeze in. To move streams under these conditions is impossible, therefore, it is necessary to have on hand additional dry hose.

Operating from outside standpipes the valve on which the hose in connected must not be shut down, and when the stream is temporarily out of service the nozzle should be left partly open pointing over the side of the building, and when operations cease, the hose is disconnected immediately at the siamese so as to drain the standpipes in order to save them from freezing and bursting standpipe by expansion. Inch and half hose streams can only be used in the inside of a building on fire, and must all be taken inside to prevent them from freezing. The two and one-half, and larger hose must have the nozzle kept partly open as, with water shut off, the line will freeze instantly, making it of no further use.

Care of Aerial Ladders and Hose

Aerial ladders sometimes become completely embedded in tons of ice, and when such occurs it requires judgment

"FIGHTING fires in sub-zero weather is extremely hard on firemen, likewise on apparatus, hose and equipment. Men working on fire escapes, ladders and roofs of adjoining buildings are exposed so much that they become caked in ice, and I have made it a practice to have these men relieved at intervals and warmed in adjoining buildings before returning to their positions."

and care to extricate them as they are liable to break and cause considerable damage. The running gear for operating aerial ladders is best enclosed. Steam and plenty of it is the only thing to thaw out ladders when they are embedded in ice.

Hose once frozen in, in a solid mass of ice, is generally ruined as it has to be chopped out with picks and axes. If however, it is not cut or damaged, it is dragged home in its frozen state to the engine-house where the couplings are steamed and the hose is hung in towers to dry.

Saving of Life Difficult Problem

Saving of life at winter fires is a difficult operation, and requires ingenuity and poise. I exhort and prepare my whole force to make them ready for every emergency. To step out in night attire on an iron fire escape means that the heat of the body is attracted by the other extreme, and the feet will remain fastened to the place they are standing, adding additional distress to those escaping from fire. In such cases when they are removed by firemen, it is quite likely that the skin will be torn from hands and feet, as well as being partly frozen, and suffering from exposure.

Ventilation at Fires Harder in Winter

Ventilation at fires is not so easily accomplished in winter. Many devices are in use to keep the cold out—in a like manner they help just as efficiently to hold and conceal heat, smoke and gases. Double doors and double windows are necessary in this climate, making it more difficult to force entry and to liberate heat, smoke and gases. Speedy action at the top of the building is necessary to vent it, and it is often necessary to use shovels to remove snow from the hatchways and cupola before they can be opened. After a fire is extinguished the building must be properly covered up, and the heating system put in operation immediately to save water-pipes and plumbing from freezing, which otherwise would cause a much greater loss.

Importance of Proper Overhauling

Overhauling, looked upon by many firemen as a job for the chore boy, is a very important phase of our work, more especially in extreme cold weather. The meeting of hot and cold air creates steam which causes a mist to rise making close observation very difficult, and with ice laden merchandise with fire below, it is necessary to chop the ice clear before goods can be turned over. This must be done with system so as to avoid further loss.

Overhead high tension wires contract with the extreme cold weather and soon become loaded with ice from fire streams. These are then very dangerous, and with the ice connection to ladders and fire escapes this whole portion of the building is liable to become charged with electricity. The wires, through the weight of ice, break very easily, therefore, it is necessary to have lineman answer all fires, so that they can cut the wires clear if conditions warrant it.

It is not an uncommon thing for the roofs of buildings adjoining the building on fire to become overloaded with ice and snow, adding additional weight which would probably carry them into the basement. Therefore, as soon as the fire streams and apparatus are properly placed, it is necessary for the officer in charge to detail ladder companies to get all drains and catch-basins in the basement of all adjoining buildings, open; also the drains on the streets, and when the accumulation of ice starts to block doorways, axes and shovels have to be used to avoid cutting off of hose companies working on the inside stairways and the fire floors.

The danger of communicating fire to the adjoining buildings is not as bad in extreme cold weather as the bricks and stone, etc., are full of frost, and the roofs covered with snow and ice, and naturally sparks falling on the adjoining buildings are more easily extinguished.

Central steam heating plants have come to the fore (both in the wholesale and residential districts) in the last few years. This eliminates the individual boiler-room in each building and thereby cuts down fire starting therein.

(From a paper read before the annual convention of International Association of Fire Chiefs.)

New Rule Saves Lives in Boston

As a direct result of the rule promulgated by Fire Commissioner Eugene C. Hultman, of the Boston Fire Department, calling for the sounding of a box alarm on all still or telephone alarms received at night several lives were saved in a recent fire in the Roxbury district of the city. Chief Daniel F. Sennot made the following report:

A still alarm was received at 11.40 P.M. for a fire at 126 Fisher Avenue, Roxbury. This building is occupied as a dwelling house by three families. Immediately after the still alarm was sent to the companies concerned the Fire Alarm Office sounded Box 2391, located on Fisher Avenue, near Bucknam Street. The sending of this box resulted in a complete first alarm box assignment to the fire. The still alarm sent one engine company and one ladder truck. The sounding of the box number sent two engine companies and an additional ladder truck.

When the first apparatus arrived it was found that the whole rear end of the building at 126 Fisher Avenue was involved and that the fire had extended to 124 and 130 Fisher Avenue. There was every evidence that the fire had gained considerable headway before it was discovered and spread rapidly, due to the type of structure from which it had originated.

By the immediate sounding of the box on receipt of the still alarm it was possible for this department to make several rescues of people who were trapped in the building. If the box had not been sent out by the department after the still alarm there might have been some delay which would have resulted with serious consequences to the residents of the building on fire. Even with the prompt action of the department it was necessary to remove one woman to the hospital, as she was overcome by smoke.

I am calling this matter to your attention because it is one of the instances which occurred as a result of the new rule which you issued some time ago governing the sounding of alarms during the sleeping hours of the night. The rule is that "on receipt of a still alarm after 11 P.M. the fire alarm office will notify the companies assigned to respond and then sound the nearest box number in order that the department will be ready to handle any emergency." It is my opinion, as well as that of several other officers of the department who were present at the fire, that the application of this rule on this occasion was of vital importance in the saving of the lives of the residents of the building."

HARRY BELKNAP.

Some Figures Pretty Much in Evidence at the Chief's Convention

Left to Right—Chief W. S. Crane, Little Falls, N. J.; Ex-Chief Paul Moore, Newark, N. J.; Wm. Barry, Eureka Fire Hose Co., N. Y.; R. W. Joyner, Dallas; Chief S. D. O'Connor, Beaumont, Tex.; B. G. West, City Comptroller, Atlanta.

Left to Right—Chief G. S. Fehr, Freedom, Pa.; Chief Peter S. Rosar, Scranton, Pa.; Chief Richard Timmins, Beaver Falls, Pa.; Chief Richard L. Smith, Pittsburgh, Pa.

THE ROUND TABLE

For Practical Discussion of Current Fire Department and Fire Management Problems

WHEN an alarm comes in, the fire apparatus must get to the spot in least possible time commensurable with safety to firemen and residents. In some places city officials have attempted to reduce possible accidents by placing a limit on the speed at which fire apparatus may travel to a fire on the city streets. In others a more liberal attitude has been taken and the drivers are permitted to exercise their own judgment.

The problem in full that is discussed in this issue is printed in the box on this page. In the box on the following page is the problem that will be treated in the next issue. Should you have some comments that you would like to make on the next question, or if you have a problem of your own that you would like to see treated in this department, write to the "Round Table Editor," FIRE ENGINEERING, 225 W. 34th St., New York, N. Y.

Here Is the Problem

What are the rules of your department regarding the speed of apparatus when responding to and returning from fires?

Now that speed limits are being raised in the cities for commercial and pleasure vehicles, is not the department justified in also increasing the allowable speed for fire apparatus?

The Question

In studying the replies received, it is evident that chiefs are aware of the dangers possible when speeding to a fire. Excessive speed limits are rare. In most cases, the speed has been set at from twenty-five to thirty miles an hour. The discussions follow:

Marven S. Morgan, Chief, Faribault, Minn.: We have no rules regarding speed of apparatus responding to a fire other than that each driver is to see that he always has his truck under control, especially approaching a state highway or streets with stop signs.

In returning from a fire we drive about twenty or twenty-five miles an hour, depending upon the number of cars on the streets. During the winter we must of necessity be more careful than at other times on account of it being hard for people in closed cars to hear the siren.

In answer to your second question I would say that while it may be alright for some cities to increase the speed limit of fire department trucks where there are through streets, I do not think this would be good policy for a city the size of Faribault.

A. McC. Marsh, Chief, Columbia, S. Car.: The rules of our department, with regard to speed of apparatus in going to fire, do not specify any definite mileage. The speed is left to the judgment of the driver and captain of the apparatus. We regard no street signals or stop signs going to a fire. However, five years ago we had a speed limit of thirty miles an hour for apparatus. After becoming chief I had this rule eliminated and had the drivers' salaries increased. To my mind this makes the driver more interested in their work and hence more careful. Since this change we have not had a single wreck from fast driving.

We are careful in selecting drivers, and before the driver is promoted to driving the apparatus, he has to drive the supply wagon for six months. This supply wagon goes to all first alarm fires.

Whenever a driver is reported by his captain for reckless driving going to or returning from a fire, he is immediately demoted in rank.

When returning to quarters from fires, drivers are ordered to obey all traffic laws. The speed limit on commercial and pleasure vehicle in our city in the last thirty days has been raised from fifteen miles per hour to twenty miles per hour.

John L. Casey, Chief Abington, Mass.: We have a rule in this department which reads as follows:

"All chauffeurs shall not operate any piece of motor apparatus at a speed exceeding thirty miles per hour in responding to an alarm. Upon approaching any corner where the apparatus is to make a turn, the speed shall be reduced to at least ten miles per hour."

With the speed limit being raised for commercial and pleasure vehicles, it would seem to me to increase the possibility of accidents. However, I believe that the drivers of automobiles are willing to cooperate with the fire department by giving them the right of way, provided the apparatus is equipped with a warning device that can be heard clear and distinct above the noise of traffic and also in closed cars. I recently equipped one piece of apparatus with a Siro-drift. We have had several runs and in each instance the way the law has been obeyed by drivers of private vehicles convinces me that our trouble in this respect has been due to a great extent to the fact that apparatus was not equipped wih a proper warning device.

H. D. Carringon, Chief, Eagle Pass, Texas: With regard to speed of apparatus, I would say that have a population of only six thousand. The department has two trucks and four drivers. However, I formerly drove a fire truck in a city a great deal larger than this and I learned by experience that the faster you ran and the more noise you made, the nearer you came to having a clear street. I have passed this on to my drivers.

Each piece of apparatus is equipped with two sirens and a bell in order that streets may be clear for the apparatus. I not only request but demand that apparatus be gotten to a fire as quickly as possible. However, if a driver has an accident he must prove that he was not responsible for it.

In returning to quarters, the apparatus is required to obey all traffic ordinances.

W. C. Shepard, Chief, Pittsfield, Mass.: Our rules call for a speed of apparatus in answering an alarm of twenty- five miles per hour. Drivers are held to this speed through traffic. If conditions warrant, such as a high wind, the officers in charge may exceed this limit.

We have traffic horns on the streets and police officers give us the right of way. When outside the heavy traffic we exceed the twenty-five mile rule and travel thirty-five or forty miles an hour.

On returning from a call the way is made clear for all apparatus, passing through red lights, as it is almost as essential to get back to quarters and ready for another call as it is to respond to a call.

Frank C. Newman, Chief, Melrose Heights, Mass.: There are no special rules with regard to the speed of apparatus going to fires. The rules only cover apparatus returning to quarters. In my opinion if we are to be efficient in saving life and property, we must get to the fire in its infancy. If we are hampered by rules, fire losses and death rates cannot be reduced. By having responsible men as drivers and also by having the cooperation of the police department, there is very little danger at any reasonable speed.

E. V. Stone, Chief Ludlow, Mass.: As every one knows, the first five minutes are the minutes in which a fire is most easily controlled. When responding to a fire call, especially in a town with limited apparatus, speedy arrival is most important. In cities, runs are usually short, at least on first alarms. Traffic conditions do not permit the speed that can be and is used in the towns. In either city or town, speed limits should be controlled only by local conditions on certain streets or corners.

In returning from a fire, the apparatus should travel at the rate of speed allowed to commercial and pleasure vehicles.

John Q. Hunt, Chief, East Weymouth, Mass.: You have opened a wide field for discussion. Conditions are different in almost every city and town. Our own problem is congested streets and squares.

We have installed traffic gongs in squares and by doing this we get the benefit of perfect cooperation from the police department.

My orders are perhaps a little bit peculiar. Our runs are sometimes quite long and it is my opinion that with practically all wood construction here we cannot get to the fire too quickly. Therefore, orders are to arrive as quickly as possible, always remembering that the driver must not cause any damage. In other ways he must always play safe. However, we do not exceed thirty-five miles an hour at any time.

F. J. Ostertag, Chief, Burlington, Ia.: We have no speed limit in responding to fire alarms. In returning from alarms our limit is twenty miles an hour and apparatus stops for all stop signs and highways.

Men driving apparatus must use good judgment with regard to speed and safety. Our men are cautioned to drive carefully in heavy traffic and at all bad intersections. I would rather see apparatus arrive at a fire a few minutes late than not reach there at all.

Cities raising speed limits should, in my opinion, also include the speed of fire apparatus.

Harry V. Gerling, Chief, Batagia, N. Y.: In regard to speed of apparatus when responding to an alarm of fire, I wish to state that our drivers are instructed to drive with care. Racing to or from a fire is not permitted. Our drivers are cautioned to turn corners at a very low speed. Apparatus always proceeds single file with plenty of space between them in order to avoid collisions.

A driver of fire apparatus should use his own judgment as to the speed at which to travel. We all realize it is necessary for apparatus to arrive at a fire as quickly as possible but it is also essential that they arrive safely.

In returning to quarters, we have no more right to speed than the commercial or pleasure car.

T. H. Shipman, Chief, New London, Conn.: The rules of this department on speed of apparatus in responding to alarms of fire are as follows:

Motor driven apparatus shall not at any time exceed a speed of twenty-five miles an hour in the main part of the city and at no time shall exceed a speed of thirty miles an hour within the city limits. When turning a corner apparatus shall not exceed a speed of eight miles an hour. Any piece of apparatus overtaking another piece of fire apparatus, with the exception of an officer's car, shall not pass same unless it is disabled. When two or more pieces of apparatus are about to turn at a time, the apparatus on the right shall at all times have the right of way. Route your apparatus so as to keep out of heavy traffic as much as possible.

I believe that the speed limit on apparatus should be taken off and left to the discretion of the officer riding the apparatus as he is the best judge of conditions.

Roy Elliott, Chief, Medford, Ore.: In answer to your question, I am pleased to say that this department is not restricted but is instructed to use precaution

To my mind departments should be allowed a reasonable amount of speed in proportion to the increase in speed allowed to pleasure and commercial vehicles.

Here Is the Problem for the Next Issue

Are drivers in your department protected by insurance against accident?

In view of the fact that drivers are held liable for accidents (city itself not being liable) do you consider it a good plan for cities to provide such insurance?

O. F. Sprout, Chief, Charleston, Ill.: We have no laws governing the speed of apparatus going to and returning from fires. The driver uses his own judgment based on condition of streets, traffic, etc. Personally, I do not think a speed limit should be put on apparatus responding to a fire. I believe this should be determined by the chief or driver of the apparatus, which is the method we use at present. There are times when a high rate of speed is justified and also safe, and then again there are times when the apparatus is confronted with conditions which warrant a much reduced rate of speed.

W. C. Green, Chief, Concord, N. H.: There is no stipulated speed at which fire apparatus is required to proceed through streets here. We presumably have right of way but drivers are supposed to use discretion and certainly no chauffeur would be upheld in staging a wreck to maintain that right.

With the street sirens, and the use of good judgment, we get along very well, although during the season when tourists are traveling it is very bad. It seems like everything on four wheels passes through here.

John Parker, Chief, San Angelo, Tex.: While there is no set speed limit for apparatus responding to alarms when driving on a straight road, drivers are not permitted to exceed ten miles an hour wen turning corners. Needless to say drivers are cautioned to use good judgment in handling the apparatus. In returning to quarters we obey all traffic laws.

D. F. Waters, Chief, Cortland, N. Y.: We have no regular rules governing apparatus responding to alarms with the exception that drivers use good judgment. We endeavor to get the aparatus to the scene of the blaze as quickly as possible.

When returning from fires, our speed limit is twenty miles an hour.

Chas. S. Hafer, Chief, Little Rock, Ark.: The fire department has the right of way here. Officers in charge and the operator of the machine use their judgment as to what is reasonably safe speed in all districts.

In returning to quarters all traffic rules are obeyed. I feel sure that where there are speed limit requirements if the department has not the right of way, it is justified in increasing the limit to the allowable speed specified.

Wm. C. Watters, Chief, Oak Park, Ill.: Our officers and drivers are instructed to respond to the alarm of fire as quickly and safely as possible. They are instructed to govern themselves according to traffic conditions and at no time drive recklessly.

In returning from fire the department conforms to all traffic regulations. Our state law speed limit has been increased, but not locally, consequently we abide by our local traffic regulations.

Mellen R. Joy, Chief, Saugus, Mass.: My rules relating to speed of apparatus responding to and returning from alarms of fire are as follows:

No apparatus shall respond to alarms of fire at a greater speed than thirty-five miles an hour. They must slow down to ten miles an hour when turning corners. In returning from fires the limit is twenty-five miles an hour and in congested districts to a speed that will insure safety.

R. H. McMillan, Chief, Jacksonville, Fla.: The speed limit of apparatus responding to alarms of fire is thirty miles an hour. In returning to quarters the driver is governed by traffic laws. I cannot see any gain in excessive speed, either from the fire apparatus or commercial standpoint. I believe there are only about fifty per cent of the people who drive machines that can do so under anything but normal conditions with reasonable safety.

Harry J. Becker, Chief, South Orange, N. J.: When answering an alarm the apparatus is driven as quickly as is consistent with safety, using the siren as a warning.

Where the speed limit is raised for commercial and pleasure vehicles, I believe that it should also be increased for fire apparatus. However, it should be re-

(*Continued on page* 1056)

WITH THE EDITOR

Raising Firemen's Pay By Referendum

The large majority in favor of the referendum submitted to the voters of New York City providing for the increase of salary for first year firemen, from $2,500 to $3,000 per annum was extremely significant as to the attitude of the general public on this question. The vote on election day showed that those in favor of the proposition numbered 762,273, out of a total vote of 960,933.

That so large a majority voted in favor of the increase in pay for the fire fighters means two things. It proves that the people of the city are proud of their fire department and recognize that the members are worthy of better compensation. It also emphasizes the fact that they consider that the men are underpaid and deserve better compensation for the efficiency of their operation and the risks that attend the fighting of fire.

But there is a deeper significance to the result of the New York public's vote on November 5 that should not be lost sight of. New York City has led the way in the performance of a very just act in thus recognizing the need for extra compensation for firemen. The voters have gone on record in favor of a living wage for the men who hold the public safety in their hands. The fact that such a majority was rolled up by the electorate of the big city with practically no solicitation shows that the rank and file of the voters recognize the service performed by the fire department and are willing to see that the men receive their just dues, when the matter is put squarely up to them.

This should lead the way for other cities to give their firemen the advantage of this public recognition. There should be little doubt that the result would be the same in other cities of the country if the matter is put intelligently before the voters. Certainly the men of a number of cities and towns are not paid in anything like the proportion that their services to the community warrant.

In this connection there is one individual who should share in the general increase of salaries in the fire department. This is the Chief. In many municipalities this official receives a pitifully small remuneration in comparison to his responsibilities. On him devolves not only the safety of the community from fire, but also the important matter of the efficiency of the fire department is completely in his hands. His personality as head of the department will have more influence on the conduct and work of his men than that of any other individual. If he really leads his firemen, there will be little question as to the efficiency of the department. To such a man, the city can afford to pay a salary that will make his job worth while to him. Not to do so is the height of folly and a lack of foresightedness on the part of the powers that be.

Prison Housing from Fire Standpoint

The New York State Commissioner of Correction has very prominently established the fact that the prisons of the state are in a deplorable condition as to fire hazards. In his recommendations made at a recent meeting of the State Crime Commission he pointed out that many of the buildings of the state prisons are not only unsanitary, but are a constant and very great fire peril as well. Owing to the increase in the length of prison terms through the operation of the Baumes Law, the conditions as regards crowding are very bad, and this, coupled with the lack of fire resistive buildings has produced a condition that should be remedied at once. He recommended the erection of fire resistive buildings to replace the present firetraps in use, and the limiting of one man to a cell for sanitary and safety reasons.

New York State is by no means alone in this condition of affairs. Many other states need drastic and quick reform in the housing of their prisoners. The cause of recent riots in penal institutions in various parts of the country can be traced to the unsanitary conditions that have prevailed in these institutions through crowding and archaic buildings. That fire has so frequently been an accompaniment of such outbreaks against discipline is significant, in showing that, in nearly every case, the buildings involved proved a ready prey to the flames. If these had been of construction which would have resisted the progress of the fire the control of the rioting would have been a much easier matter.

Gradually such old and unserviceable buildings will disappear in the usual course of events. But it would be wiser if the substitution of modern penal buildings were pushed rapidly in all states where such bad conditions exist.

Sounding Box Alarm on Receipt of a "Still"

By a rule recently adopted in the Boston Fire Department that on the receipt of a still alarm after the hour of eleven p.m., a box alarm must at once be sounded, several lives were saved that might otherwise have been sacrificed.

A fire occurred in a three-family dwelling house in the Massachusetts metropolis late at night. The still alarm, in this instance was received at 11:10 p.m., and immediately the fire alarm dispatcher sounded the nearest box. The still alarm would have called an engine company and a ladder truck, but, by the immediate sending of the box alarm, two engine companies and an additional lad-

der truck were dispatched to the scene of the fire. These additional forces, as events proved in this instance, were sorely needed, for the dwelling had become seriously involved and it was necessary to employ quick methods to rescue the trapped tenants on the upper floors.

This plan has worked so well where it has been tried out that it should be worthy of trial by other fire departments which have not as yet put it in practice. Fires in tenements, apartments or dwellings at night, when the tenants are heavy with sleep and bewildered from sudden awakening to the terror of fire, always contain the possibilities of serious hazard to life and the precaution of having plenty of help on hand at the earliest moment in such cases is certainly worth the extra trouble and expense it involves.

CHIEF EVANS HOLDS INFORMAL RECEPTION AT CONVENTION

Presented With Antique as Token of Esteem by Those Invited—Friends Remember Him for Party

THOSE summoned to attend Chief Evans's going-out party at the Birmingham convention are one in agreeing that it was a most unique affair. Possibly it was the modern trend in society functions which resulted in the late hour for starting the affair or possibly it was the originality of Chief Evans, coupled with the fire department custom of answering "invitations" promptly and at all hours of the night without question, which postponed activities.

At any rate, the first invitation extended was sent via telephone somewhere between 2 and 3 o'clock on the morning of October 24. From that time on invitations were sent out as rapidly as the telephone facilities in the room and down in the hotel office could accommodate. As a result the last invitation was not extended until well on toward daybreak. It is quite a testimonial to Chief Evans's social ability that out of all invitations extended but two of the invited failed to respond. As it was strictly a stag affair, there was a sneaking suspicion that female domestic interference had something to do with these two declinations.

(*Continued on page* 1050)

A Mule Has Been Added to the "Official" Family

Upper—a group taken just after the presentation of the gift to "Our Beloved President John M. Evans"; left to right, Mrs. John M. Evans, the mule (age doubtful), George Morley and Chief John M. Evans. Lower—Mr. Morley astride his antique, and to the right, Paxton Mendelsohn.

LOOK, BOB, HE MUST BE GOIN' TA STAGE A WATER BATTLE
UM!
IS THAT THE WAY YOU RESPOND TO FIRES? WHERE'S JOE SULLIVAN
SEARCH ME!
WOT'SA BIG IDEA?
WHATSIZ ROOM NUMBA?
LET'S PLAY SAFE AND STICK TOGETHER, JAY!
WAIT'LL I PUT MY FALSE TEETH IN

No Conventional Dress Was Necessary at Chief Evans's Early Morning Court

Questions and Answers

NOTE—Readers are invited to send in questions, which will be answered in the order received. Names are omitted from questions unless otherwise specified

Transformer Fire

To the Editor:

I wish you would answer the following questions through your Questions and Answers department.

What would you do if you were called to extinguish a burning transformer on a telephone or electric light pole? The transformer has set fire to the pole and insulation on wires.

Kindly state your actions and what you would do.

Thanking you in advance, I am,

Yours truly,

E. K.

Answer: The very first thing to do would be to communicate with the power company and have the current cut off of this particular line, or if there is a cutout in the immediate neighborhood and the department is familiar with the operation of this cutout, the section should be cut out while the fire is being extinguished.

On the other hand, if there is immediate danger of fire spreading to adjoining structures, or doing other serious damage and current cannot be cut off, water streams may be used on the fire, provided the nozzle is kept at least twenty-five feet away from the transformer and also provided that the water employed is fresh water, and not salt water.

After the main body of the fire has been extinguished in this manner, it may be possible to get to the transformer with carbon dioxide extinguisher or carbon tetrachloride extinguisher to finish up the work. However in this case extreme caution will have to be observed so that the men sent up the ladder to perform this operation are not endangered by molten metal or other results of short circuit which might occur.

How Many Engines?

To the Editor:

I will appreciate very much your cooperation if you will answer the following question in an early issue:

The following layout is made: two lines of 2½-inch hose, each 200 feet in length, are stretched from an engine to a siamese connection from which 50 feet of hose is laid up a ladder to an elevation of 50 feet (apparently the siamese is a short distance up the ladder because the nozzle employed is 50 feet above the ground). A 2½-inch nozzle is used. 90 pounds pressure is wanted at the nozzle.

What will be the discharge?

What pressure will be required at the engine?

If 750 gallon pumpers are used, how many will be required?

Cordially yours,

F. C. L.

Answers First combine the two parallel lines of 2½-inch hose into a single line. The factor for this conversion is 3.6.

200÷3.6=55.6.

Then change the 3-inch hose to 2½-inch. Factor for this purpose is 2.6.

50÷2.6=19.2 feet of 2½-inch hose.

The entire layout is then equivalent to 55.6+19.2 or 74.8 feet of 2½-inch hose.

E.P.=90 x (1.1+1.55 x 1.496).

=90 x (1.1+2.3188).

=90 x 3.4188=307.7 pounds.

This pressure does not take into account the back pressure due to the elevation of the nozzle which is 50 feet, nor does it take into account any friction loss in the siamese connection. Where the flow is high through the siamese connection, as it is in this case, some pressure must be allowed for loss through the siamese. Five pounds is satisfactory.

Back pressure, due to an elevation of 50 feet, equals 50 x .434 or 21.7 pounds.

The corrected engine pressure is then 307.7+21.7+5 or 334.4 pounds.

Discharge may be found by either of two formulas, namely Discharge=$29.7 \times d \times d \times \sqrt{p}$ or $30 \times d \times d \times \sqrt{p}$. The latter is an approximate formula. The former will be used in this case.

Discharge=$29.7 \times 2 \times 2 \times \sqrt{90}$

or $29.7 \times 2 \times 2 \times 9.48$, giving us 1126 gallons per minute approximately.

The practical rule employed by engineers in testing engines is to require of a pumper its full rated capacity at its rated pressure, 120 pounds; one-half its rated capacity at 200 pounds pressure, and one-third its rated capacity at 250 pounds pressure. However, theoretically the engine should give a little bit greater capacity than this, particularly if it is in first class condition.

The theoretical rule in finding discharges at different pressures is to multiply the rated discharge by the rated pressure and divide this product by the pressure at which we wish to find the discharge.

In this case the engine pressure is to be 334 pounds. A 750 gallon pumper would give us, at 334 pounds, a discharge equal to 750 x 120÷334, or 269 gallons per minute. This is a liberal discharge to allow at such a high pressure.

As the discharge from the nozzle is 1126 gallons per minute, it would require the equivalent capacity of five engines at 334 pounds to supply the 2-inch nozzle operating at 90 pounds nozzle pressure.

Calculating Engine Pressure

To the Editor:

A thousand-gallon pumper is fed by a single 200-ft. line of 2¾-inch hose attached to a hydrant at which the pressure is 90 pounds. The pumper is pumping through a single length of 2¾-inch to the street siamese connection of a 6-inch standpipe. At the fifth floor standpipe outlet, a 2½ by 1½ two way Y connection is placed and two 100 foot lines of 1½-inch hose are laid, each equipped with ¾-inch nozzle. 40 pounds is wanted at each nozzle. Can the 1,000 gallon pumper supply the required pressure? If so, at what pressure will the pump be operated?

I shall appreciate an early solution of the above.

C. G. A.

Answer: As there are different diameters of hose in this layout the first step would be to change all hose to 2½-inch.

The factor for changing 2¾-inch hose to 2½-inch is 1.66.

The factor for changing 1½-inch hose to 2½-inch is .074.

200÷1.66=120.5 feet of 2½-inch hose.

50÷1.66=30 feet of 2½-inch hose.

100÷.074=1351 feet of 2½-inch hose.

Next combine the two parallel lines on the fifth floor, which are equivalent to 1351 feet of 2½-inch hose each, into a single line of 2½-inch hose. The factor for changing parallel lines to a single line is 3.6.

1351÷3.6=375 feet of 2½-inch hose, single line.

Then combine the two ¾-inch nozzles into a single nozzle. This is done by squaring the diameter of each of the nozzles, adding the squares and taking the square root of the sum so found.

¾ x ¾=.75 x .75=.5625.

2 x .5625=1.125.

Take the square root of 1.125, and the result is 1.06.

The nearest standard size nozzle to this diameter must be taken.

A 1⅛-inch nozzle has a diameter of 1.125 while a 1-inch nozzle has, of course, a diameter of 1-inch. The 1-inch nozzle is nearer to the calculated size, 1.06, than is the 1⅛-inch nozzle; hence we will assume that the two ¾-inch nozzles are equivalent to a 1-inch nozzle.

The hose layout from the above calculations is equivalent to a single line of 2½-inch hose 30 plus 375 or 405 feet in length, equipped with 1-inch nozzle.

Engine pressure (neglecting the friction loss in the standpipe, and the back pressure) equals N.P. x (1.1+K.L.).

K for 2½-inch hose and 1-inch nozzle is .105.

L is 405÷50=8.1.

N.P.=40 pounds.

Then E.P.=40 x (1.1+.105 x 8.1)

=40 x (1.1+.8505)

=40 x 1.9505

=78 pounds.

This is the pressure required at the engine to overcome friction loss in hose and give 40 pounds at the nozzle. It does not take into account the back pressure due to the elevation of the nozzle nor does it take into account the friction loss in the standpipe. These must be added to the above engine pressure to secure the correct engine pressure.

The friction loss in a standpipe is usually taken as 25 pounds.

Back pressure = elevation of nozzle × .434.

The nozzles are approximately four stories above the engine outlet, at which the gauge is placed. 4 x 12½=50 elevation of nozzle. Back pressure =50 x .434, or 21.7 pounds.

Corrected engine pressure is then 78+25+21.7, or 124.7 pounds.

The 1000 gallon pumper can easily supply this requirement without any help whatsoever from the hydrant.

As a matter of fact, the combined nozzle used in the above calculation is smaller than what the calculation shows the combined nozzles should be but this is due to the fact that we use a standard size nozzle rather than a nozzle 1.06 inches in diameter. Even with the larger diameter nozzle, 1.06, the engine would still be able to supply the 40 pounds at the nozzle without help from the hydrant.

In the above calculation the pressure at the combined nozzle is precisely the same as what it would be at each of the individual ¾-inch nozzles.

CHIEF THOMAS R. MURPHY, OF SAN FRANCISCO, DEAD

Passes Away at His Home After a Long Illness, Caused by Inhaling Smoke From Creosoted Piles a Year Ago—His Career

THOMAS R. MURPHY, Chief of the San Francisco, Cal., Fire Department, and a former President of the I. A. F. C., died at his home in that city, after a long fight against failing health, on Monday, November 4. The cause of Chief Murphy's illness arose from his devotion to duty. During a pier fire in October, 1928, he inhaled a quantity of the smoke from burning creosoted piles. In spite of this fact, the Chief continued on duty for twenty hours at this fire. On returning home, he complained of pains in his chest, and stomach poisoning developed. From that time his health gradually failed. He had been on a sick bed for several months before his death.

The Late Chief Thomas R. Murphy, San Francisco, Cal.

For thirty-seven years he was a member of the San Francisco Fire Department. He started as a driver in 1892, when he was 21 years old and was driving a team along the waterfront when the then Assistant Chief Sullivan offered him a chance to drive a fire team. Young Murphy jumped at it.

His first 24-hour watch was spent at No. 4 truck, then the assistant chief's headquarters at Second and Howard streets. When he went home his mother was greatly disturbed. It was the first time young Tom had ever been out all night.

In 1897 Chief Murphy was made a captain. In 1905 he became battalion chief. It was while he occupied this position that he earned his first national recognition. It was during the great conflagration of 1906. The Navy men from Mare Island were present in force offering every possible aid. Chief Dennis T. Sullivan was dead—killed on the first day of the great disaster. A Navy officer had stationed a number of his men on a burning building, Murphy advised him to get them away. They could do no good there, he said. The officer demurred.

"You go your way and I'll go mine," Murphy told him. "They can do no good there. Some of them will be killed. I'll not be a party to it."

The officer gave in. Shortly the building collapsed.

"You take command," said the navy officer. "You know this game."

They worked together effectively after that, and months later the Secretary of the Navy asked the mayor of San Francisco to have Murphy promoted, if it was possible. It was. He was made assistant chief.

In 1910 he became chief of the department.

In 1923 Chief Murphy was awarded a decoration and a diploma by the government of Paris, and has been honored by many others. During periods when he was in other parts of the country he worked tirelessly in the interests of San Francisco, where he was born in 1875.

Though Chief Murphy studiously avoided politics and political entanglements, he never hesitated to step to the forefront in the interests of his department, to make it more effective and to protect the rights and interests of his men. And when, after several months of his last illness, an attempt was made to remove him as chief because he was bedridden, the citizens of San Francisco voiced a protest that astonished those who sought to oust the stricken chief.

Chief Murphy was elected president of the International Association of Fire Chiefs in 1926 at the New Orleans Convention, and presided at the Portland Convention of the association in 1927.

Ex-Chief Coleman of Miami, Dead

William R. Coleman, formerly head of the fire department in Miami, Fla., and a member of that department for seventeen years, died in a local hospital at the age of forty-one, following an illness that lasted for several years.

He was a native of Illinois and came to Miami from Denver, nineteen years ago. For two years he was employed by the Florida East Coast Railway and in 1912 he joined the fire department as an electrician. In the same year Mr. Coleman was promoted to lieutenant and three years later he was advanced to the grade of captain. He was appointed head of the department in May, 1917 and he continued in that office for eleven years. Chief Coleman was the sixth fire chief of the city. He held that office longer than any of his predecessors. He retired February, 1928.

Chief Coleman was a past president of the State Firemen's Association, and was a member of the B. P. O. Elks.

He is survived by his widow, his mother, a sister and a brother.

Egyptian Fire Fighters to Meet

An interesting program has been arranged for the meeting of the Egyptian Fire Fighters Association that is to be held in Murphysboro, Ill., November 20.

John G. Gamber, formerly fire marshal of Illinois, will describe the interesting points of the International Association of Fire Chiefs convention held in Birmingham. Chief George Ward, Drill Master of the St. Louis Fire Department will speak on "Your Obligation to Your City as a Fireman."

At the luncheon to be held in the Presbyterian Church, Harry K. Rogers of the Western Actuarial Bureau, Chicago, will talk on fire prevention. The forty-piece orchestra of the Murphysboro Township High School will play during the luncheon.

In the afternoon James O'Donnell, chief of the Underwriters' Salvage Corps, St. Louis, will present a paper on "The Value of Salvage Work." S. D. Levings of Chicago will speak on "The Modern Trend in Fire Alarm Protection," and he will follow his talk with demonstrations.

Other demonstrations have been arranged by the P. B. Products Company, and The American LaFrance & Foamite Industries.

Exhibits will be on display at the Convention Hall in the Elks Home. Boy Scouts will direct visitors to the convention hall.

A Ladies' Reception Committee has been appointed with Mrs. Albert Herring as chairman. The ladies will be treated with an auto ride about the city, a tea at the home of Mrs. Herring and a shopping tour through the business district.

FALLING WALL KILLS 2, HURTS MANY AT WORCESTER FIRE

Chief C. L. McCarthy on Way to Birmingham Convention, Hurriedly Returned to City Upon Hearing of Disaster

TWO officers of the Worcester Fire Department were killed by a falling wall at a fire which destroyed the Day Trust Warehouse on October 21 with a loss estimated at $200,000. Twelve other fire fighters are in the hospital suffering from injuries received.

Lieutenant Carl R. Swenson was killed and Captain Henry C. Kane of Hose Company No. 4, died in the hospital a few hours after he had been admitted.

The firemen were working in a narrow alley when a "back draught" blew out a section of the top floor of the

The Day Trust Warehouse in Worcester After the Fire

warehouse and covered the men with debris before they had a chance to escape.

The building occupied one-quarter of a city block in the high value section. It was from four to six stories high and was thirty-five years old. The building was constructed of both wood and brick and had partition walls but no sprinkler equipment.

The blaze started in the basement. It is believed that some smoker dropped a match near a closet, but of that no one is certain. An A. D. T. alarm was received at 2.38 a. m. When the first company arrived all of the basement was fully involved.

The first alarm brought Engine 1 and 3, Chemical 1, Ladders 1, 3 and 7, and the district chief. The second alarm called out Engine 2, Hose 1, 2, and 7. The third alarm brought Engines 4 and 6, Hose 3 and 8, and Ladder 6. The companies were in charge of Deputy Chief Henry Douglass.

Twenty-six single lines, three deluge lines and two deck guns were used at the fire. The engines were supplied with 110 pounds average water pressure from fourteen hydrants. There was plenty of water from the sixteen and twenty-inch mains that supplied the hydrants in that district. The sizes of the nozzles varied from 1⅛ to 1¼ inches. About 20,000 feet of hose were coupled at the blaze. The special tools included two deck guns and three deluge sets. The many alarms brought 275 members of the fire department to the scene.

The loss of the property has been set at $145,000 and an estimate of the loss on both building and contents is $200,000.

Chief Charles L. McCarthy had just arrived at Birmingham, Ala., with the party of New England fire chiefs to attend the International Association of Fire Chiefs convention when he received news of the serious fire. Chief McCarthy embarked on the first train going north so that he could reach Worcester at once.

Great Falls May Abandon Two Houses—The Mayor of Great Falls, Mont., has recommended that two fire stations be abandoned, so that the city can save $12,000 yearly. No definite action has been taken.

A Good Stop Made at Church Fire

Three alarms were sounded from the Allston section of Boston on the morning of October 20 for a fire in the edifice of the Brighton Avenue Baptist Church in Union Square.

The blaze originated from a defective chimney and swept through a blind attic and cock loft, the flames soon breaking through the shingle roof of the large frame structure.

The officers in charge of department operations were Assistant Chief Henry A. Fox, who was Acting Chief of Department in the absence from the city of Chief Daniel F. Sennott; Deputy Chief Quigley, and District Chief Andreoli, O'Brien, and Stickel.

The hydrant pressure was from thirty-five to thirty-eight pounds and the engine pressures from 120 to 180 pounds. Pumpers and aerial hook and ladder trucks were used to good advantage, lines being taken to the roof and operated through holes chopped in the shingles.

A ladder pipe with Invincible nozzle was used on Ladder 14 and a wagon gun was operated by Engine Company 37. Another Morse gun was used on the wagon of Engine 51, operating on the belfry of the church. Engines 26 and 51 ran lines to a wagon gun and Engines 13 and 33 took lines inside. Engines 13, 26, 29, and 41 and Ladder 11 worked on the first floor, balcony, and steeple landings. Members of the Boston Protective Department spread rubber covers over the pipe organ and altar.

The building was 150 feet in length, forty-five feet in width, and about fifty in height. It was built in 1853 and was owned by the Baptist Church Corporation.

Four aerial ladders were used. The total length of ladders raised was 622 feet and the amount of hose laid was 4,900 feet. Both post and Lowry hydrants were used. The nozzles ranged in size from 1⅛-inch and 1¼-inch on mobile lines to 1½-inch on guns and the ladder pipe.

The response of apparatus was as follows: On the first alarm—Engines 41, 29, 34; ladders 14 and 11, chief of district 11. On the second alarm—engines 51, 37, 33, 10, and 13; ladders 26 and 15; tower 2, chief of district 8, and deputy chief of division 2. On the third alarm engines 26, 32, 24, 15, 23, and 3 responded.

The first alarm was received at 9:35 a. m.; second at 9:41; and third at 9:44. Two firemen were injured. Reginald Hiltz, choirmaster, made his way into the church and

Fighting the Fire in the Baptist Church, Boston

brought out a Bible, the National and State flags, and some rolls of valued sheet music. The damage was estimated at $40,000.

HARRY BELKNAP.

San Antonio Holds Up Action on Station—Action on the construction of a new fire station in the Harlandale section has been delayed until the city completes its new city map establishing the city limits.

Akron Again to Try to Sell Stations—The city purchasing agent of Akron, Ohio, will make another attempt to sell the old fire stations Nos. 4 and 6, which have not been used by the department for a number of years. When the auction was first advertised it failed to attract a single bidder.

WHAT'S BURNING

THE following list includes fires of $25,000 loss and over in the United States and Canada, for the periods designated in the headings. These figures, compiled from telegraphic reports, are based on estimates made at the time, and are subject to later investigation and consequent revision. Taken as a whole, however, they give an approximately correct view of the losses incurred. The figures represent loss in thousand.

Week Ending November 1

BROOKLYN, N. Y.—Freighter "Nippon", Cosulich Steamship Co. 40
BICAYUNE, MISS.—D'Antonio Building Destroyed..... 80
REEDSVILLE, WIS.—Barn of Otto Mahnke, 4 Mi. S. E..... 25
WESTPORT, CONN.—Dairy Building of Joubaud Estate, 2 Mi. Out 45
OMAHA, NEBR.—Property of McCaffrey Estate..... 30
E. HINGHAM, MASS.—Residence of Mrs. E. P. Thayer, Turkey Hill 40
DETROIT, MICH.—Business Building, 9030 Grand Ave..... 150
ST. LOUIS, MO.—Plant of F. A. Kauffmann Mfg. Co..... 80
BRUNSWICK, GA.—Property of Downing Company..... 25
MARSHALLTOWN, IA.—Elmwood Country Clubhouse, 2 Mi. S... 30
MEDIAPOLIS, IA.—Elevator of Farmers Supply Co..... 25
LOS ANGELES, CAL.—11 Dwellings at Malibu Beach..... 175
DURHAM, ONT.—Canadian Bank of Commerce, Adj. Property.... 150
PULTNEY, VT.—Fire Station and Apparatus..... 40
ROBBINSTON, ME.—Plant of Frontier Canning Co..... 150
LONG BRANCH, N. J.—Business Buildings, 180-82 Broadway... 80
GRENDA, MISS.—Planters Hotel destroyed 30
WAHPETON, N. D.—Seed elevator of Holthusen Bros..... 25
LONG BEACH, CAL.—Signal Hill plant of Empire Refining Co..... 65
BOSTON, MASS.—Grand Union Hotel, Blair Lumber plant..... 45
GOUVERNEUR, N. Y.—Katzman Dept. Store..... 40
NEWARK, N. J.—Factory of Spanjer Bros., adj. property..... 65
NEW WILMINGTON, PA.—Apt. building of J. C. Monroe..... 25
E. CHICAGO, IND.—Foundry of O. R. Lavin & Sons..... 200
NOEL, MO.—Noel Consolidated School destroyed 25
CHICAGO, ILL.—Bldg. occupied by Alliance Finance Corp..... 30
S. PORCUPINE, ONT.—Mill of Dome Gold Mine.....1,000
BROWNING, MO.—Owl Pharmacy Bldg., adj. property..... 50
BUFFALO, N. Y.—Gates Circle garage destroyed..... 40
CORTLAND, N. Y.—Property of Rosen Bros..... 25
ALLISON, IA.—School building damaged..... 25
PITTSBURGH, PA.—Three buildings in "Hill" district..... 30
ALAMEDA, CAL.—Encinal Terminal pier damaged.....1,500
FOND DU LAC, WIS.—Plant of Excel Candy Co..... 25
LEBANON, N. J.—Barn of Max Frederick destroyed..... 30
TRANSYLVANIA, IA.—Property of Abston & Crump..... 25
BRADDOCK, PA.—Prince & Allman Lumber Co..... 200
WAXAHACHIE, TEX.—Beeson Hall destroyed..... 35
CARROLLTON, OHIO.—Plant of Tuscan Rubber Co..... 400
BALTIMORE, MD.—Diamond Grit Co. plant destroyed..... 65
WESTFIELD, MASS.—Parks block damaged..... 40
DAVENPORT, IA.—Walsh-Shuler building damaged..... 25

Week Ending November 8

KANSAS CITY, MO.—Plant of Pan American Feed Co..... 25
CHEBANSE, ILL.—Business property destroyed..... 25
ATLAS, MICH.—Flint Masonic Country Clubhouse..... 80
MILTON, KY.—Plant of Trimble Milling Co..... 40
ESSEX FALLS, N. J.—Dwelling owned by Dr. J. T. Hannan.. 35
CAMBRIDGE, MASS.—Whse. of Fraser & Walker..... 25
TICONDEROGA, N. Y.—Indian Kettle Inn, Indian Kettle Park 65
SUDBURY, ONT.—Whse. of D. L. McKinnon & Sons..... 80
BORDEN, SASK.—Business property destroyed..... 25
W. SACRAMENTO, CAL.—Property of Alaska Packing Co..... 30
GREENVILLE, ME.—Barns on S. L. Mussy farm, 2 mi. E..... 35
HOOD RIVER, ORE.—Ranch home of A. W. Peters..... 25
CHICAGO, ILL.—Illinois Cork Plant damaged..... 80
GREENFIELD, MASS.—Lawler Theatre building..... 40
BELLEVILLE, N. J.—Belleville Gardens, Main St..... 25
KERSHAW, S. C.—Bldg. of F. W. Hilton, adj. property..... 35
EMPORIUM, PA.—Logan garage destroyed..... 150
NORTH SCRANTON, PA.—Richfield Oil Co. supply house..... 30
SCHROON LAKE, N. Y.—Schroon Lake Hotel, of P. H. Sheehy..... 35
WINNIPEG, MAN.—Cattle barn, Manitoba Agricultural College.... 25
CHICAGO, ILL.—Theatre bldg., Madison & Clark Sts..... 45
CARLISLE, PA.—Property owned by Harry Levine..... 40
KINSTON, N. C.—No. Queen St. business property..... 35
DUNKIRK, N. Y.—Regents Theatre destroyed..... 100
SO. ST. JOSEPH, MO.—Stockyard property..... 55
TRENTON, TENN.—Trenton Cotton Mill destroyed..... 200
SQUANTUM, MASS.—Property of Lamb & O'Connell..... 125
DEXTER, ME.—Farm bldgs. of Thos. Paine, 2 mi. out..... 30
CHICAGO, ILL.—West 32nd St. property of Armour & Co..... 200
VALPARAISO, IND.—Meagher Drug store..... 25

Chief Evans Holds Reception

(*Continued from page* 1046)

The method of presenting invitations was so effective that the invited did not know of the nature of the affair, even though they may have had forebodings of what was in store for them. The average time of response to invitation from the time the telephone receiver was hung up until the guest arrived was in the neighborhood of 2 minutes, 45½ seconds. Naturally, those who had retired at the time of receiving the invitation had to do fast work in donning the proper suit for the occasion, with the result that many reported in rather ultra modern styles, such as business suits over pajamas, false teeth in hand, etc.

In the neighborhood of forty selected guests were received at this function and all were enthusiastic in their exclamations.

As a token of the deep esteem in which President Evans was held, and as a return courtesy on the part of those attending the party, a little return event was staged in his honor. On Thursday afternoon, promptly at 2 o'clock the entire convention assembled in the exhibit hall where Chief Evans was enthroned, surrounded by the Birmingham Fire Department band. After a few introductory remarks by Chief Jay Stevens, Chief Sherwood Brockwell was called on to make the address of presentation. He extolled Chief Evans, and praised the fine service which the Chief had rendered as President of the Association. As a token of the esteem in which the Chief was held, particularly by those attending his little party early in the morning, Chief Sherwood Brockwell made the presentation of a gift which was as unique as the reception. This gift, of true southern type, was made possible by members of the Detroit Delegation which included two of the honored guests at Chief Evans's party. These were George Morley and Paxton Mendelssohn. It consisted of a well decorated species of mule well on toward the age of antiquity but which still had sufficient strength left to navigate and carry its rider, George Morley, in the presence of the President.

Chief Evans accepted this little expression of good feeling from his friends, and after trying unsuccessfully to palm it off on his wife, agreed to take it to New Orleans with him. Up to the time of going to press no word has been received as to how far he had gotten on his journey toward the metropolis of the south, but with his executive ability Chief Evans may be depended upon to carry the task to completion.

The sketch herewith by Art Espey, which was suggested by an eye witness, together with the snapshots, show the party, and the gift to the Chief.

Johnson City, Tenn., to Erect Fire House—Bids were received in Johnson City, Tenn., for the erection of new fire department headquarters. Plans for the building have already been drawn, and specifications written.

With the Eastern Fire Chiefs' Party on a Visit to Chimney Rock, Asheville, N. C.

(Left to right) first group—O. E. Fearn, Supt. Machinery, F. D., Washington, D. C.; Chief James Duncan, Jr., Alexandria, Va.; Chief Martin Quinn, Martinsburg, W. Va.; Walter Withers, American-La France Co., Washington; J. H. Green, Eureka Fire Hose Co., New York; I. H. Case, FIRE ENGINEERING, New York. Second group—Chief R. L. Smith, Pittsburgh; Chief J. J. Mulcahey, Yonkers, N. Y.; Chief Geo. W. Hedden, Buffalo, N. Y. Third group—J. E. Chalfant, Frank M. Watters and A. B. Brown, of the American-La France & Foamite Industries, New York.

The Eastern Fire Chiefs' party, on way back from Birmingham convention, stopped off at Asheville, N. C., as guests of Chief A. L. Duckett (in front row center).

Photo was taken at the famous Grove Park Inn, where the visitors were served breakfast before leaving on an all-day sightseeing trip.

Missouri Valley Association Growing

Among the divisional organizations of the International Association of Fire Chiefs reporting at the Birmingham Convention was the Missouri Valley Association, which is showing a very healthy growth. The treasury is in good shape, there being a satisfactory balance on hand, after all expenses incidental to membership drive have been taken care of.

The present members of the Association are as follows:

W. A. Buel, Chief Fire Dept., Parsons, Kans.; Ray Tiller, Chief Fire Dept., Waterloo, Iowa; Jos. Waidelich, Chief Fire Dept., Topeka, Kans.; M. M. Kickles, Chief Fire Dept., Iowa Falls, Iowa; H. N. Sowers, Chief Fire Dept., Atchison, Kans.; G. M. Kellogg, Chief Fire Dept., Sioux City, Iowa; Wm. F. Reinisch, Chief Fire Dept., Lawrence, Kans.; R. S. Miller, Chief Fire Dept., Spirit Lake, Iowa; Olander Lind, Chief Fire Dept., Kansas City, Kans.; L. R. Morris, Chief Fire Dept., Ames, Iowa; H. J. Callahan, Chief Fire Dept., Fort Dodge, Iowa; Paul F. Dolan, Chief Fire Dept., Cedar Rapids, Iowa; T. C. Hanson, Chief Fire Dept., Lincoln, Neb.; Alex. Henderson, Chief Fire Dept., Kansas City, Missouri; Glenn T. Scott, American La-France Co., Kansas City, Mo.; A. J. Stout, Chief Fire Dept., Hutchinson, Kans.; E. J. Rayburn, Chief Fire Dept., El Dorado, Kans.; J. J. Clark, Chief, Iowa City, Iowa; Chas. Brocke, Chief, Sioux Center, Iowa; F. Brandenburg, Arkansas City, Mo.; H. G. Regan, Chief, St. Joseph, Mo.; Thos. M. Walden, Chief, Columbia, Mo.; Chas. H. Nolton, Chief, Williamsburg, Iowa; J. H. Hammitt, Chief, St. Johns, Kans.; W. A. Kemper, Chief, Missouri Valley, Iowa; G. A. Stevens, Chief, Leavenworth, Kans.; Chas. W. Sloan, Chief, Ottumwa, Iowa; Ernest Ludwig, Chief, Minilla, Iowa; S. E. Matheny, Eureka Fire Hose Co., Des Moines, Iowa; J. C. Egner, Chief, Fire Patrols, Kansas City, Mo.; H. R. Becker, Chief, Le Mare, Iowa; J. Burr Taylor, Actuary Bureau, Gloyd Bldg., Kansas City, Mo.; D. E. Parks, Pres., P-B Mfg. Co., St. Louis, Mo.; C. J. Parker, Chief, Independence, Iowa; C. A. Stephenson, Chief, Red Oak, Iowa; L. J. Figi, Chief, Sac City, Iowa; H. E. Keith, Chief, Ida Grove, Iowa; W. H. Frazier, Chief, Webster City, Iowa; Harry E. Winn, Asst. Chief, Red Oak, Iowa; J. C. Dobson, Chief, Keokuk, Iowa; Ed. P. Taylor, Chief Fire Dept., Cheyenne, Wyo.; Ernest T. Clayton, Chief Fire Dept., Corydon, Iowa; Herman J. Amish, Chief Fire Dept., Iowa City, Ia.; Frank J. Ostertag, Chief, Burlington, Iowa; A. P. Hughes, Chief, Storm Lake, Iowa; F. A. McCarty, Chief, Emmettsburg, Iowa; H. A. Adams, Chief, Spencer, Iowa; Harry A. Whiteside, Chief, Beatrice, Iowa; Dolph Becker, Chief, Oelwein, Iowa; J. Daniels, Chief, Carroll, Iowa; Richard A. Kelley, Chief, Davenport, Iowa; W. J. Nelson, Chief, Cherokee, Iowa; R. S. Willard, Chief, Fort Madison, Iowa; P. D. McCartin, Chief, Colorado Springs, Colo.; Joe W. Fisher, Chief, Dubuque, Iowa; Wm. Payle, Chief, Oskaloosa, Iowa; Will Burnett, Chief, Des Moines, Iowa; Chas. Alt, Chief, St. Louis, Mo.; James Black, Chief, Grand Forks, North Dakota; P. T. Noble, Chief, Manhattan, Kans.; E. J. Stewart, Chief Engr., 701 Jackson, Topeka, Kans.; K. D. Doyle, Asst. Chief, Wamigo, Kans.; Herrold Stanton, Engr., Fire Dept., Storm Lake, Iowa; E. P. Farris, P-B Products Co., 2155 Blendon Pl., St. Louis, Mo.; A. W. Meier, Master Mechanic, 2000 Washington St., St. Louis, Mo.; Marvin W. Murphy, Asst. Chief, David City, Neb.; Geo. R. Ward, District Chief, 3434 Shenandoah Ave., St. Louis, Mo.; Wm. W. Thompson, Electrician, 405 City Hall, St. Louis, Mo.

Muscatine, Ia., Considers Rural Runs—The council of Muscatine, Ia., is considering limiting runs outside of the city to five miles. According to a present law, the apparatus is prohibited from leaving the city.

Eastern Chiefs Have Enjoyable Trip

Bound for the I. A. F. C. Convention at Birmingham with a party made up of more than one hundred fire chiefs and others from various sections of the East, the Fire Chiefs' Special, conducted under the personal direction of A. B. Brown, of the American-La France & Foamite Industries, left New York Sunday, Oct. 20th, on a perfectly arranged trip that everybody enjoyed immensely.

The train, with de luxe Pullman equipment throughout including club and observation cars, made its first stop enroute at Chattanooga, Tenn. Here, as guests of Chief Wm. Toomey, the party was taken in motor cars on a sightseeing trip to such interesting places as Chickamauga National Park and Signal Mountain, winding up with a sumptuous barbecue at the Fire and Police Outing Club.

On the return trip, following the Birmingham Convention, another delightful day was spent at Asheville, N. Car., as guests of Fire Chief A. L. Duckett. The party was taken by automobile to the Grove Park Inn for breakfast, followed by a sightseeing trip through the Black Mountains and up to the famous Chimney rock. From there the party was driven to the Kenilworth Inn at Biltmore, N. Car., for luncheon returning to the train at 4 P. M.

In a resolution drawn up and signed by every member of the party, Mr. Brown was highly commended for his efforts in making the trip the big success it was. Mr. Brown announced that it was his plan to make these special convention parties an annual affair from now on.

CORRESPONDENCE

Fire Protection in the Schools

To the Editor:

The article in the October 2 issue of FIRE ENGINEERING, entitled "School Buildings, Plenty of Them Burning Down" appealed to me very much, particularly as it came to hand just as I was preparing to talk to school audiences during National Fire Prevention Week.

And as I went about through buildings of this character, one salient feature impressed itself upon me most forcibly, and this was the indifference to the all important measure of first-aid fire protection. Inquiry as to the "why" of situations, I found elicited the stereotype expressions which seem to me evidence of the height of ignorance on the part of those in charge, or a most lamentable legal status.

Among the reasons given for lack of such equipment were the too familiar "We never have had a fire, and are very careful," and "This building is *absolutely* fireproof!" (sometimes that meant metal ceilings). And in the case of at least 12 brand new structures, mostly completed, "We haven't gotten around to those *minor* matters yet," and "They (extinguishers) spoil the looks of our nice new walls" (it is assumed smoke would not). And from several fire chiefs, came "I have no jurisdiction over schools."

Out of my experiences comes the thought that, perhaps, the

one person most blameworthy is the architect. He, by reason of his technical training, is supposed to be thoroughly alive to the importance of fire protection, and his plans and specifications should, it seems to me, indicate complete equipment, type, placing, etc., as well as drapes and lighting fixtures. And if it is felt that copper-colored extinguishers hung upon the face of a wall are unsightly, and the cabinet with glass door adds too much expense, why could not the architect design convenient niches or recesses about two-thirds the diameter of the proposed extinguishers?

Furthermore, and what seems to me most important of all, if there is any rule or law governing school buildings which, either by commission or omission, denies to fire chiefs the right to direct protective or preventive practices in such institutions, there is a big field for constructive legislation for some firemanic body to engage in.

I have treated with one type of portable equipment only, extinguishers, because the field of my observations was amply supplied with municipal fire extinguishing facilities to attack fires which have progressed beyond the stage which may be controlled by a couple of extinguishers, and because I believe it is wiser to depend upon extinguishers for first-aid attack and because house lines are seldom used by the fire department in low buildings of this character.

Very truly yours,

WM. PAUL BABCOCK.

Nyack, N. Y., October 25, 1929.

Watch Hill Saves Summer Homes

The fire department of Watch Hill, R. I., has won an enviable reputation for itself as one of the most efficient small town volunteer forces in New England.

Under the leadership of Chief A. W. Hoxie the Watch Hill firemen have successfully coped with a number of serious fires in the frame buildings of the large summer colony.

In the old days when a summer residence took fire it was usually doomed to destruction from the start. When the Watch Hill House and several other large wooden hotels were destroyed some years ago in a spectacular blaze that nearly wiped out the community, steps were taken to insure against such calamities in the future.

A modern firehouse of stucco construction was built on a lot of land near the harbor and situated close to the congested business street that is the main thoroughfare of the community. A triple combination motor pumping engine was purchased and placed in service, also a combination chemical and hose wagon.

Only a few months after the re-organization of the department a fire broke out in a pretensious summer home located on a hill exposed to the full force of the wind. The motor pumper swung into action and although the flames had obtained great headway the firemen succeeded in saving

Members of the Department in front of the Firehouse

the structure. Several other fires of a similar nature were extinguished with small loss and the residents soon realized that the town had an efficient and well equipped department ready to answer all alarms sent in on the improved alarm system.

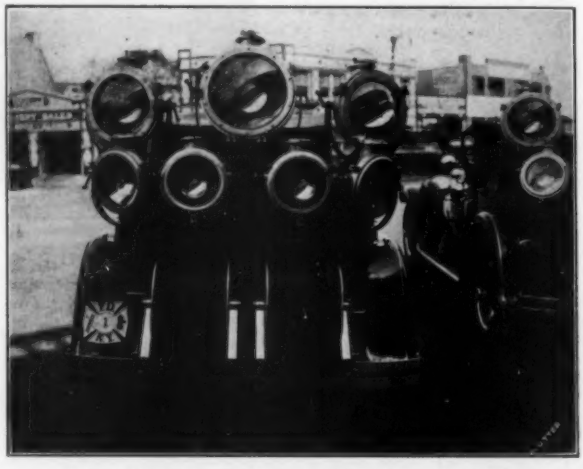
Calls for help from nearby communities have also been answered and aid was sent to Westerly at the time of the fire there which threatened to sweep the heart of the city.

Watch Hill is one of the most popular seashore resorts on the southern New England coast. The Ocean House and the Hotel Plympton are the two largest hotels, both frame structures. There are many handsome residences as well as a business section, large bathing pavillions, golf clubs, yacht club, etc. The section is hilly, but the department is aided by excellent roads.

HARRY BELKNAP.

Searchlights Presented to New York

Two searchlight trucks, gifts of Edward J. Kenny, honorary deputy chief, in memory of his father, Battalion Chief Thomas A. Kenny were formally presented to the New York Fire Department on Tuesday evening, October 8th, in front of the new quarters of Hook and Ladder Co. No. 3 on East 13th street near Fourth avenue. The presentation was made



Searchlight Trucks Presented to New York City

by Chief Kenny in conjunction with the opening of the new fire engine house by Mayor James J. Walker who accepted the gifts on behalf of the city. Fire Commissioner John J. Dorman accepted them on behalf of the Fire Department.

The searchlights were set in action by Mayor Walker, who turned their 3,700 watts each on the taller buildings in that neighborhood. The new firehouse is occupied by H & L Co. 3, Water Tower No. 2 and the Chief of the 6th Battalion. It is of standard design and replaces a very old structure on that site for many years.

Chief Kenny's gift to the city is the last word in illumination of buildings afire. Both machines are Packard cars, eight cylinder with 140-inch wheel base and can travel ninety miles an hour. They cost $7,500 each and are of 106 horse power. Each machine has two Kohler electric plants weighing 520 pounds each and capable of developing 5,000 kilowats maximum. There are two flood lights of 500 watts each; four portable lights of 300 watts each and a searchlight of 1,500 watts.

The new searchlight engines were shown to the public as part of the Fire Prevention week parade. One of them has been assigned to quarters in Duane street near Broadway to replace an old searchlight engine that has done many years of duty in Manhattan, while the other new searchlight is quartered in Brooklyn Fire Headquarters on Jay street, where it replaces old Searchlight No. 2.

The old machines, also gifts of the Kenny family in memory of their father, have been sent to the Fire Department repair shops for general overhauling and also to be equipped with Kohler electric plants. When reconditioned one of these original searchlight engines will be assigned by Fire Chief Kenlon to a station in the Bronx and the other to the outskirts of Brooklyn, where it will be convenient to Jamaica and other parts of Queens as well as to the Cross Bay Boulevard for fire duty in the Rockaways.

WM. JEROME DALY.

Company Added to Sioux City—Company No. 9, a new fire company, has been added in Sioux City, Ia. Companies down town will not be required now to make runs to the northern section of the city.

Death Delays Station Opening

On the eve of the day set for the formal opening of its new and only fire station, the town of Cos Cob, Conn., situated on the Boston Post Road between Greenwich and Stamford, Conn., was bereaved by the sudden death of William E. Anthony, president of the Cos Cob Fire Department. Death was attributed to heart disease. He was 59 years and had been intensely interested in the affairs of the fire company.

Instead of a gala opening of the new $70,000 fire house, the projected jubilee was turned into a public funeral and

New Fire Station in Cos Cob, Conn.

the new fire station draped in mourning before it was officially used for anything else.

Cos Cob is twenty-two square miles in area, has a population of 6,000 persons. It operates a 100 h.p. Stutz pumper of 600 gallons, a Simplex chemical, a Locomobile hose wagon carrying 1,300 feet of 2½ inch canvas hose and a Matheson engine of the vintage of 1906, said to be the first direct-attached pumper in this country.

The fire company has 150 members, 60 of whom are active. The town had seventy-two fires last year. The only paid member is the driver. The water is supplied by gravity pressure furnishing from 80 to 120 pounds at the hydrants. A new Loper fire alarm system made in Stonington, Conn. has just been installed with 38 districts. The station is also equipped with a first aid or police wagon which carries an H-H inhalator and other modern first aid equipment.

The adjourned date of the formal opening of the new fire house has not as yet been announced. There is to be a parade of fire companies from the volunteer departments of Fairfield County, Conn., and Westchester County, N. Y.

WM. J. DALY.

Ex-Convict Charged With Arson

The fire that was started in an uncompleted apartment house at Amsterdam avenue and 183rd street, Manhattan, is attributed to the work of an ex-convict who is now being held on an arson charge. Under cross examination he admitted friendship with the organizer of the Plasterers' Information Bureau and the United Lathing Company and that he was formerly employed on a building that was swept by fire when it was nearing completion.

The prisoner faces a homicide charge because of the death of a plasterer who was trapped and burned to death in the Amsterdam avenue fire.

He was arrested after four days of investigation by Fire Marshal Thomas Brophy.

Retired Firemen Celebrate Chicago Fire—The Retired Firemen's Association of Chicago, Ill., celebrated the fifty-eighth anniversary of the great Chicago fire. A smoker was given to the surviving members of the fire department of 1871.

New Pension Law in Knoxville, Tenn.—One per cent is taken from the pay of firemen in Knoxville, Tenn., in accordance with the provisions of the new pension law passed by the state legislature.

Bond Issue Urged for Chicago—Commissioner Goodrich of Chicago has asked for a $6,000,000 bond issue for the construction and repair of fire stations. This matter will be voted on at the November election. The bond issue has the endorsement of Commissioner of Buildings.

Cambridge Firemen Stop Bad Fire

A very good stop of a threatening fire in Cambridge, Mass., was made on the morning of Nov. 1 by the department under direction of Chief James M. Casey and Deputy Chief Cutler Vose.

The blaze originated in a 4-story frame storage building on Brookline Street and had already communicated to the rear of an adjoining frame tenement when the first apparatus reached the scene.

A second alarm was at once sounded and streams were brought into action from rear fire escapes and roofs of nearby structures while two lines were taken over the stairway in the tenement. The wind was blowing the fire directly toward the tenement and quick work was necessary to save this structure the rear of which was well involved.

The new searchlight wagon of the department proved its value. Dense smoke hampered the operations of the department. Among those witnessing the fire was Chief Selden R. Allen, of Brookline, who complimented Chief Casey very highly upon the efficient handling of the blaze. The flames had obtained great headway before they were discovered shortly before 2 a. m. by a party in an automobile returning from a Hallowe'en celebration. Six families living in the tenement house were aroused and made their way to the street in safety. The fire was in a thickly settled neighborhood. Damage was estimated at $25,000.

HARRY BELKNAP.

Fighting Fires Under Difficulty

Included in the report of the forest fires this season in the Pacific Northwest is an account of a forest guard endowed with more than the usual amount of perseverance.

In the height of the bad fire season, a lookout discovered a wisp of smoke, later designated as a "lost" fire, on the Deschutes National Forest in Oregon. Forest Guard Howard LaDuke, who last spring received his first fire-fighting training, was given three days' food supplies and dispatched on a motor cycle with instructions to find the fire and stay with it until it was trenched.

Four days passed; no word came from LaDuke and no more smoke was seen. Fearing an accident, the fire dispatcher sent a man to investigate. On the fifth day the motor cycle was found but there were no traces of LaDuke except footprints leading farther into the forest. Finally, the officer came upon a fire covering some two acres, but well under control, though still being tended by a half-starved, nearly exhausted but triumphant guard. Single-handed and with food sufficient for little more than half that time, LaDuke had struggled with the flames day and night for five days.

He explained that he had been unable to leave because the wind continually carried sparks which started new fires.

At the Fire Chiefs' Convention, Birmingham

(Left) The Three Musketeers in annual reunion—"Bob" Hazzard and Clarence Stewart of the American-La France Co., and George Morley of the Morley Signal Engineering Co. This is none other than Chief Gus Rhem of Mobile, Ala., whose marked resemblance to Al Smith had everybody guessing for a while. The derby was even brown.

Fighting High Fires from Below

(*Continued from page* 1040)

lines may be stretched directly from the standpipe on floors below the fire to the fire floor, but if the fire has gained considerable headway it will be best to use Y connections at each standpipe outlet so that the maximum number of streams may be employed from the outlets on the floors immediately below the fire floor.

Engines will have to be put in operation at the street to supply the standpipe system, provided a high pressure system is not available. Even if the high pressure system is available, sometimes buildings are so high that the back pressure and friction loss make it necessary to boost the pressure from the high pressure system or else put pumpers into operation to deliver water from the low pressure system at sufficient pressure into the standpipe. If pumping apparatus is not capable of delivering the pressures desired at the street connection of the standpipe system, it may be necessary to place them in tandem, that is, the intake of one engine connected directly to the discharge of another, and the intake of the other engine connected directly to hydrant. In this way the sum of pressure capable of being delivered by the two engines are added together at the outlet of the second engine, which will be approximately the pressure delivered to the street siamese of the standpipe system.

Fig. 2. Crowds Watching Fire That Damaged Cupola of City Hall, Milwaukee

Well Built Hose Needed

Of course, care will have to be taken to use only the best of hose for this operation, for where exceedingly high pressures are delivered directly into a hose line, there is possibility of the hose rupturing and delaying the operations of the department just at the time when a delay will represent the greatest handicap to the department. This likewise applies where engines are pumping through hose lines stretched up the face of a building, or up stairways to higher floors.

Where it is necessary to stretch lines up to the fire from the street, two methods of accomplishing this are commonly employed. The first is by stretching the line up the face of the building and supporting the line at each 50 foot length, or stretching it up the stairwell to the floor beneath the fire floor. The details of these operations have been previously described in this journal. In any case, sufficient pressure will have to be maintained at the engine to give satisfactory nozzle pressure at the end of the line.

In getting lines of hose in operation, elevators are sometimes employed, particularly in carrying men and sections of hose to the upper floors. Elevators are also sometimes used for snaking a line of hose up the shaft, although this operation is not commonly employed due to the fact that it may put the elevator shaft out of commission when the lines are charged, locking the car above such lines.

In any case where elevators are brought into use for fire fighting operations, great care should be taken that only those cars whose hoist mechanisms are not seriously exposed to the fire are put into service. At a fire in New York City, men employing an elevator car were carried up beyond the fire floor due to the failure of control mechanism to operate, as fire had reached the hoisting machinery. Had the men not been provided with suitable equipment, they would have been trapped above the fire and possibly have lost their lives. For that reason it is very essential that men using cars carry

Fig. 3. The Sherry-Netherlands Hotel Fire in New York

In this case the building was in course of construction, and combustible scaffolding took fire, carrying the blaze rapidly up through the tower. Standpipes were not in operating condition, and as a result lines had to be stretched from the street up thirty floors to the floor beneath the fire. Note the stream (A) directed from the left hand center of the picture up over the edge of the lower part of the building to the fire which was burning near the base of the tower.

with them axes and roof ropes so that in the event the car becomes stuck or stalled in the shaft, or passing the fire floor due to failure of control equipment, they will not be cut off from rescue. It is extremely dangerous practice to order men above a fire in a tall building, even though the fire does not fully involve a floor.

Procedure in Fighting the Fire

The exact procedure to be followed in fighting the fire depends largely upon the size of building, location and number of standpipes and the height of the fire. In all cases, the usual practice is to connect engines to standpipe connections at street, send lines up the building to the floor beneath the fire floor and stretch up by way of stairway to fire floor.

Insofar as covering exposed buildings, which are in danger of becoming ignited through radiated heat is concerned, this is usually accomplished by putting the standpipe equipment in the exposed building to work, and directing streams from the windows above the exposed section so that the shower so produced will cool off the atmosphere and prevent ignition. In some cases lines are stretched to windows directly exposed to fire and operated therefrom. In any case, the spray produced by streams from a great elevation are most effective in killing the heat incidental to a neighboring fire, and are apt to accomplish considerable in the way of checking the spread of the fire.

In some cases, where the buildings are sufficiently close together standpipe equipment in adjoining buildings may be brought into play for operating on the fire and preventing its spreading externally to floors above. To accomplish this it may be necessary to stretch lines from the standpipe outlets on different floors, siamesing them into a single line equipped with large nozzle. The large nozzle will give good range, give a stiff stream, and produce effective results in covering exposures.

As a final word it may be mentioned that high fires require great numbers of men and for this reason, even though the extent of the fire would not ordinarily necessitate a multiple alarm if the fire were one or two stories above the street, in the case of a skyscraper fire no time should be lost in sending in additional alarms to make sure that plenty of men will be on hand to carry on the heavy work which will be required of them.

NOT ALL GAS MIXTURES IN MINES AFTER FIRES ARE INFLAMMABLE

"Inflammability of Mixed Gases" Issued by the Bureau of Mines Contains a Mass of Interesting Data on the Burning Hazards

THE results of numerous experiments made on the inflammability of gas mixtures consisting of methane, hydrogen, carbon monoxide, nitrogen, and carbon dioxide, combined in varying proportions, has just been made public by the United States Bureau of Mines, Department of Commerce. Data were obtained relative to the extinctive action of nitrogen and carbon dioxide on each of the three combustible gases, methane, hydrogen, and carbon monoxide, and tables were prepared whereby the inflammable limits of each of these combustibles, when mixed with various proportions of inert gases (nitrogen and carbon dioxide) can at once be obtained. By the use of these data and the application of Le Chatelier's law for the calculation of the limits of inflammability when two or more combustibles are present, it is possible to calculate the limits of inflammability of any gas mixture containing any or all of these gases and in any given proportion.

Mine fire gases vary greatly in composition, states G. W. Jones, in "Inflammability of Mixed Gases," just published. Some do not contain enough combustibles to produce an inflammable mixture when mixed with air, whereas others may be inflammable over wide limits. In general, each minefire should be investigated separately and the atmosphere sampled from day to day after it has been sealed. Definite information may be obtained by taking a representative sample of the mine-fire atmosphere every day or two, analyzing this sample, and then calculating its inflammability by the method given; in addition, determine within what oxygen limits the atmosphere is inflammable.

High percentages of methane raise the percentage of oxygen required to propagate flame, while high percentages of carbon monoxide and hydrogen lower the oxygen required. In general, mine-fire gases may vary in composition from those that are noninflammable to those that have very wide inflammable limits.

When explosives are detonated in mines, gases consisting largely of carbon dioxide, nitrogen, carbon monoxide, hydrogen, and methane are produced. The amount of combustibles (carbon monoxide, hydrogen, and methane) produced depends largely on the ratio of combustibles to oxygen-producing constituents in the explosive, or the "oxygen balance" of the explosive.

In coal mines if the coal that is being broken down liberates very little methane the resultant gases may or may not be inflammable, depending on the type of explosive used. An explosive, however, that does not liberate enough combustible gases to be inflammable may, if used in a gassy coal bed, become inflammable because of the liberation of additional methane from the coal broken down.

The data obtained show that automobile exhaust gases at ordinary temperatures are inflammable when the air-fuel ratio is below about 11.75 and suggest the possibility of eliminating the toxic gas, carbon monoxide, from automobile exhaust gas for rather rich carburetor adjustments by the addition of air to the exhaust in the proportions given.

However, tests made on a great number of automobiles and trucks by the Bureau of Mines showed that the average carburetor adjustment gave an air-fuel ratio of 12.5 pounds of air to 1 of gas. With the advancement in carburetor design since these tests were made it is very probable that the average adjustment is higher than this value. It is thus seen that for the average automobile or truck the exhaust gas is non-inflammable at ordinary temperatures. Preheating the admitted air or utilizing the sensible heat in the exhaust gases might possibly extend the inflammable area to some extent and thus widen the area of inflammability.

The gases resulting from mine explosions vary over wide ranges of composition, and each particular case will be different.

Hightstown, N. J., Buys Pumper—A 500-gallon pumper has been purchased by Hightstown, N. J.

Russell, Ky., to Buy Fire Apparatus—A pumper of either 500 or 600-gallon capacity is to be purchased by Russell, Ky.

Battalion Chief of Chicago Retires—Michael F. Yore, Battalion Chief of the Chicago Fire Department, has retired after twenty-seven years service. He served as assistant drillmaster for eight years. He is now employed by the Yondor Clothes and Uniform Company, Chicago.

A Few of the Good Old New Jersey Standbys Who Traveled to Birmingham with the Eastern Fire Chiefs' Party. Photo Taken After a Mountain Climb at Chimney Rock, No. Car.

The Round Table

(*Continued from page* 1044)

membered that there is always danger of an accident and for this reason the driver should have the apparatus under control at all times.

E. A. McGranahan, Chief, Wheeling, W. Va.: Due to the many accidents caused by apparatus being driven too fast, a rule has been put in force setting the speed limit at twenty-five miles an hour. When returning to quarters, all traffic rules are obeyed.

I am of the opinion that there are too many cars at the present time to increase the speed limit.

T. O. Flowers, Chief, Rock Hill, S. Car.: Our policy has always been to get to a fire as quickly as possible. Pedestrians give the apparatus right of way. When returning to the station, all traffic rules are obeyed by the department.

W. G. Harris, Chief, Bluefield, W. Va.: I do not believe any set speed should be required for fire apparatus. Apparatus should be gotten to the blaze as quickly as possible in order to extinguish the fire and get back to quarters in the event of another alarm being received.

If apparatus is to be limited to a certain speed then it would be better to purchase commercial trucks equipped with governers on them and save the difference in the cost of these trucks and the more expensive trucks built for speed.

To my mind a driver of fire apparatus that has to be governed by a certain speed limit in order to keep him from being reckless, should not be in the department.

Dan Miller, Chief, Metropolis, Ill.: We always use caution in driving to fires. If traffic is heavy the apparatus is driven at from fifteen to twenty-five miles an hour, whereas if the road is clear the speed is increased to from forty to forty-five miles an hour. The thing that the department has to contend with all the time is the driver who will not go to the curb but insists on racing the department to a fire.

In returning to quarters, while care is taken at all times, we try to get back as quickly as possible in case another alarm has been turned in.

James Ellemeyer, Chief, Kittanning, Pa.: We have no definite speed regulation established by either the council or officers of the department. Our drivers are expected to drive with the best speed possible, taking into consideration traffic conditions, the width of streets, intersections to be crossed, etc. I think the safety of the men and apparatus should be considered first and speed second. It is better to be a few minutes late than not to arrive at all.

W. B. Milliner, Chief, Wabash, Ind.: We have no speed limit for our apparatus. Drivers are told to get the apparatus to the scene of fire as quickly as possible. At the same time they are cautioned to use judgment both going to and returning from fires.

H. E. Whitney, Jr., Chief, Brattleboro, Vt.: We have no speed limit here. Drivers are instructed to have their machines under control at all times in order to be able to stop reasonably quick in an emergency. It is our policy to use care not to damage our apparatus, ourselves, or anyone else in going to a fire even though we might take a little longer getting there.

When returning from a fire, all traffic regulations are obeyed by the department.

Otto Hackbroth, Chief, Marinette, Wis.: Common sense and good judgment is the first rule to be observed in driving apparatus. It is much better to arrive at a place a little later and avoid accidents. The department has been criticized for traveling too fast when going to fires by persons who don't seem to have very good judgment as to speed. The City Council has called our attention as to speed traveled and I have asked them to set a speed limit. However they have not done so up to the present time.

In answer to your question I would say that if the speed limit of private vehicles is increased, the limit should be raised for fire apparatus.

C. H. Russell, Chief, Kalamazoo, Mich.: We have no set speed limit for fire apparatus here. This is left to the drivers. The fire department has the right of way in going to fires. In congested districts we travel about thirty-five miles an hour but where the road is clear the speed is increased to from forty-five to fifty miles an hour. All traffic rules are observed when returning to quarters, and the speed limit is twenty five miles an hour.

Thos. Milburn, Chief, Jeannette, Pa.: In answering an alarm of fire we travel about thirty-five miles an hour. However, when returning, all traffic rules are obeyed.

I believe that fire apparatus is also justified in having the speed limit increased if that of other vehicles is increased.

A. J. Bethancourt, Chief, Houma, La.: The fire department here has no speed limit. The quicker the apparatus gets to the blaze, the less chance the fire has of getting any headway. A few minutes means a great deal at a fire. When returning we drive slowly in order to avoid accidents.

Houma has a population of about 6,000 and the people are educated to the fact that they must keep out of the way of fire apparatus. However, this is harder to accomplish in large cities.

C. O. Pass, Chief, Cisco, Texas: We have no set speed limit for fire apparatus responding to alarms. However, when returning from a fire we are governed by the same rules as any other vehicles. We believe that the department should have the same privileges with regard to speed as private cars. If the speed is increased it should also be increased for fire apparatus.

J. J. Powell, Chief, Griffin, Ga.: There is no speed limit on apparatus in our department. In going to or returning from fires, drivers are cautioned to use good judgment and care in order to avoid accidents.

I do not believe a speed limit should be placed on fire apparatus. However, if this is done, I am of the opinion that it should be greater than that of other vehicles in order to give the department right of way.

Chief of Fire Dept., Greenville, Fla.: We have no set speed limit governing fire apparatus. Drivers are instructed to use good judgment at all times in order to protect citizens.

In returning from a fire, the orders are to obey traffic rules, that is, not to exceed twenty miles an hour.

R. E. Pitts, Chief, Tulsa, Okla.: The rule governing fire apparatus responding to an alarm is:

"Drivers shall not allow their apparatus to be driven at a rate of speed greater than can be maintained with safety. All apparatus approaching blind corners and boulevards shall be kept at a speed that can be stopped

A Few Smiling Countenances Snapped at the Fire Chief's Convention

Left to Right—Chief A. Dutton, Edmonton, Alta.; Chief Frank Parkey, Gary, Ind.; Tom R. Johnstone, American Magirus Fire Appliance Co.; Chief R. Gauthier, Montreal.

Left to Right—Chief S. and "Ma" Ferguson, Ft. Worth, Tex.; "Dick" Joyner, Dallas Mgr. Eureka Hose and American-La France; Mrs. "Chief" S. D. O'Connor, Beaumont, Tex.; Jos. H. Green, Vice-Pres. Eureka Fire Hose Co., N. Y.

Left to Right—Chief Tom Lyle, Okmulgee, Okla.; Chief Geo. Goff, Okla. City.; Chief Geo. E. Renken, Laredo, Tex.; Chas. Slemp, Sec'y Okla. State Firemen's Ass'n, Okla. City; Chief S. D. O'Connor, Beaumont, Tex.

if necessary. All traffic rules are to be obeyed in returning to quarters."

The speed limit in this city has not been increased due to the increased population which tends to cause congestion.

John T. Moore, Chief, Memphis, Tenn.: Our department has right of way going to a fire. The rule of our department when responding to an alarm is to get there as quickly as possible. In returning to the station, all traffic rules are obeyed.

Wm. O'Neill, Chief, Weehawken, N. J.: The speed limit of fire apparatus is twenty-five miles an hour. Increasing the speed limits for commercial and pleasure cars is something I do not approve of, especially in congested areas. Twenty-five miles an hour is fast enough for fire apparatus and too fast for any other kind of a vehicle in this municipality.

John Weaver, Chief, Massena, N. Y.: In answer to your question I would say that we have no rules governing the speed of fire apparatus with the exception that drivers use good judgment at all times.

If the speed limit of private vehicles is increased it should also be increased for fire apparatus. However, "safety first" should be kept in mind.

Albert Krenz, Chief, Clinton, Iowa: Our speed limit in going to fires is thirty-five miles an hour. We conform to the city ordinance of twenty-five miles an hour in residential districts and fifteen miles an hour in the business districts when returning from an alarm.

Chief of Fire Dept., College, Mo.: We have no speed laws governing fire apparatus responding to an alarm. This is left entirely up to the judgment of the man in charge. He instructs the driver just how fast to travel and is held responsible for everything.

When returning from a fire, we obey all traffic rules.

Frank Jennings, Chief, Ardmore, Okla.: We have no set speed limit for our apparatus when going to a fire. We drive about forty or forty-five miles an hour when possible. On returning we drive in line with other traffic, stopping at all stop signs.

Sam Lindsay, Chief, Marshall, Tex.: We drive from forty to forty-five miles an hour when going to a fire. However, our men are not allowed to exceed this limit.

In answer to your second question I would say that I do believe the speed limit should be raised on fire apparatus now that it is being raised on other vehicles.

Chas. Brecke, Chief, Chippewa Falls, Wis.: We have no set speed limit governing apparatus responding to alarms of fire. However, we drive slowly when returning to quarters. I am of the opinion that the speed limit of fire apparatus should be increased to correspond with that of other vehicles.

Martin Quinn, Chief, Martinsburg, W. Va.: We have a speed limit of twenty-five miles an hour through the business district and thirty-five to forty miles an hour in outlying districts. When returning from fires, we observe all traffic rules.

A. E. Henry, Chief, Prescott, Ariz.: We have no speed limit in our city for fire apparatus. Drivers are cautioned to have their apparatus under control at all times in order to insure safety. Our drivers are permitted to run fifty miles an hour if the road is clear. We have little or no accidents.

J. F. Smith, Chief, South Pasadena, Cal.: The speed limit for the fire department in this city is twenty-five miles an hour where streets are congested. In open districts, where the view is not obstructed, the speed is forty miles. Drivers are cautioned to use precaution at all times.

In answer to your second question I believe that fire departments are justified in raising the speed limit.

Dolph Becker, Chief, Oelwein, Ia.: We are governed by the state code of Iowa. The city has a speed limit of fifteen miles an hour in business districts and twenty-five miles an hour in more open sections. However, this does not govern fire apparatus.

Yes, I believe departments would be justified in more speed if this is allowed pleasure cars.

S. J. Flores, Chief, Shreveport, La.: The speed limit of this department is thirty-five miles an hour unless a call is received in the middle of the night at which time we travel forty miles an hour.

Fire departments should have their speed limit increased in proportion to other vehicles.

Louis Sacco, Chief, Hudson, N. Y.: We have no set speed limit in going to a fire. The department is given right of way. When returning, the speed is twenty-five miles an hour.

Chas. H. Hewins, Foreman, Hampton, Va.: We have no set rules for apparatus responding to fires. The men are instructed to use judgment at all times. The result is that we drive about twenty-five miles an hour in the city limits and as fast with safety in outlying districts.

John F. Schroder, Chief, Covington, Ky.: We have no speed limit when answering an alarm of fire. We simply use our own judgment with regard to speed in congested districts. However, when returning to quarters we travel fifteen miles an hour.

Roy Davis, Chief, Duryea, Pa.: The speed limit of fire apparatus responding to alarms is forty miles an hour. Yes, I believe that since the speed limits are being raised in various cities for pleasure and commercial vehicles, it should also be raised for fire apparatus.

Frank Hochreiter, Chief, Wilkes Barre, Pa.: The speed limit of fire apparatus is twenty miles an hour. I certainly believe the speed limit should be increased for fire apparatus when a greater speed is allowed commercial and pleasure cars.

Geo. E. Koeber, Chief, Bloomfield, N. J.: The speed limit of apparatus is from twenty-five to thirty miles an hour when responding to an alarm and twenty miles an hour when returning to quarters.

Yes, I am of the opinion that the speed of fire apparatus should be increased in proportion to that allowed pleasure and commercial vehicles.

Fred. Lambert, Chief, Oshkosh, Wis.: Thirty-five miles an hour is the speed limit of apparatus responding to alarms. When returning all traffic rules are obeyed. We believe our present speed is fast enough in view of the increasing amount of traffic.

Stephen J. DeMay, Chief, Detroit, Mich.: In answer to your question I would say that the speed limits for this department are as follows: Engine companies twenty miles an hour; ladder companies, twenty-five miles; rescue companies, thirty miles. No set speed is required of the Chief of department.

Yessir! They Were All Happy at the Birmingham Convention

Left to Right—Chief W. J. Russell, Toronto; F. R. Grady, Factory Supt., Eureka Fire Hose Co.; Chief M. E. Clark, Williamsport, Pa.; J. E. Chalfant, American-La France & Foamite Co., York, Pa.; Chief Richard L. Smith, Pittsburgh, Pa.; Chief E. M. McGranahan, Wheeling, W. Va.

Left to Right—Chief H. J. Becker, So. Orange, N. J.; Chief F. W. Schier, Union City, N. J.; Chief Ernest Beckert, West New York, N. J.; Chief John Gibson, Mt. Vernon, N. Y.; Chief A. Chamberlin, Hillside, N. J.; Comm'r Fred Merkle, Mt. Vernon, N. Y.; Chief A. T. Callahan, Harrison, N. J.

I do believe that where the speed limit is increased for commercial and pleasure cars it should also be increased for fire apparatus.

G. Rehm, Chief, Mobile, Ala.: The speed limit of apparatus responding to an alarm is thirty-five miles an hour. In returning to quarters it is from eight to ten miles.

B. W. Norton, Chief, Bisbee, Ariz.: Our city is so different from any other city that we do not have set rules or regulations. We are either going up hill, down hill or around a curve at all times. The only rule we observe is to drive with care.

Claud Summers, Chief, Norman, Okla.: The speed limit of apparatus responding to alarms is thirty-five miles an hour. When returning all traffic rules are obeyed. I do not believe the speed of fire apparatus should be increased.

S. L. Rodger, Chief, Olean, N. Y.: There is no set speed limit for apparatus going to a fire. When returning to quarters, traffic regulations are observed.

Yes, I believe if the speed limit of commercial and pleasure vehicles is increased, it should also be increased for fire apparatus.

Wm. Nill, Chief, Hammond, Ind.: There is no set speed limit for fire apparatus responding to alarms of fire. All traffic rules are obeyed when returning to quarters.

Bert Sybrant, Chief, Bellingham, Wash.: Some years ago the city council placed a limit of twenty-five miles an hour on apparatus traveling through congested districts. However, since the traffic speed has been raised we have been using our own judgment according to the traffic we encounter. We always travel on arterial streets and highways as far as possible. Personally I think the speed of fire apparatus should be raised.

Eastern Regulars Visit Cincinnati

As in past years, the "Eastern Regulars," conducted by Frederic Bensen, journeyed to and from the Convention of the International Association of Fire Chiefs in a special train and gave the members of the party all the sight-seeing they wanted enroute.

Starting from New York Sunday noon, October 20th, the party was taken to Buffalo, and then to Cincinnati where Monday was spent in sight-seeing. Included in the features of entertainment at this city was an inspection of the Ahrens-Fox Fire Engine Company plant, a welcome by Mayor Murray Seasongood and City Manager C. O. Sherrill, of Cincinnati, luncheon at Mariemont Inn, a visit to Eden Park where Ahrens-Fox Pumpers were demonstrated at the reservoir; sight seeing trip throughout the entire city covering nearly three hours, by automobile.

At the conclusion of the sight seeing trip, dinner was served at the Cincinnati Club, through the courtesy of the Ahrens-Fox Fire Engine Company.

Mariemont Inn is located in a new real estate development whose projector and sponsor is Marie M. Emery. This development is in the form of a town, carefully laid out by the nation's foremost city planners. It is a most unique, and unusual settlement, and promises to stand out in the future as one of the finest residential communities in the country.

Leaving Cincinnati late in the evening, the delegates arrived at Birmingham the next morning and had plenty of time to straighten up affairs and register before the opening session.

Immediately following the close of the convention the Eastern Regulars boarded the train and were taken to Buffalo, where Sunday was spent in viewing the Niagara Falls and in a tour of inspection around Buffalo and Niagara Falls. The members of the party returned to the train in time for supper, and the special reached Hoboken, N. J., Monday morning.

Approximately sixty chiefs and guests made up the Eastern Regulars' party and all were unanimous in saying that it was the finest trip ever conducted by Mr. Bensen.

Credit for the success of the affair is also due to two of Mr. Bensen's men, Howard Long and Charlie Wood. Mr. Long is well known in the Pacific Coast where he had been in the fire apparatus game for many years, and where he built up a large circle of friends. In a similar manner he has extended his friendship through fire departments throughout the East.

Charlie Wood is of the Philadelphia office of the Ahrens-Fox Fire Engine Company, and this was his first trip with the Eastern Regulars.

While in Cincinnati the party had a chance to meet Mr. Keplinger, a new official in the Ahrens-Fox Fire Engine Company, and Mr. Charles Fox, their genial President, as well as Mr. John Ahrens, Vice-President and Treasurer.

Some of the Eastern Regulars Lined Up in Front of "The Hermitage," Andrew Jackson's Home, Near Nashville, Tenn.

Wife of Chief McAuliffe Dead

Fire department circles were shocked to learn of the death of the wife of Chief Frank C. McAuliffe of the Chicago Fire Insurance Patrol. She was forty-two years old and died as the result of a sudden heart attack.

She was buried on October 21 at the All Saints Catholic Cemetery following services at the Lady of Mercy Catholic Church. At the funeral there were 130 automobiles and four cars loaded with flowers.

The Chief and Mrs. McAuliffe were married on Thanksgiving Day, 1908. Besides Chief McAuliffe, four children survive.

CORRESPONDENCE

Fire Protective Apparatus Wanted

To the Editor:

We are very anxious to add further lines in fire protective apparatus to complete our equipment, and it has occurred to us that there may possibly be a number of American manufacturers of articles of real merit patented in this country who have not been able to fix up a manufacturing arrangement with any concern over on this side. We have had over one hundred years experience in the fire equipment business.

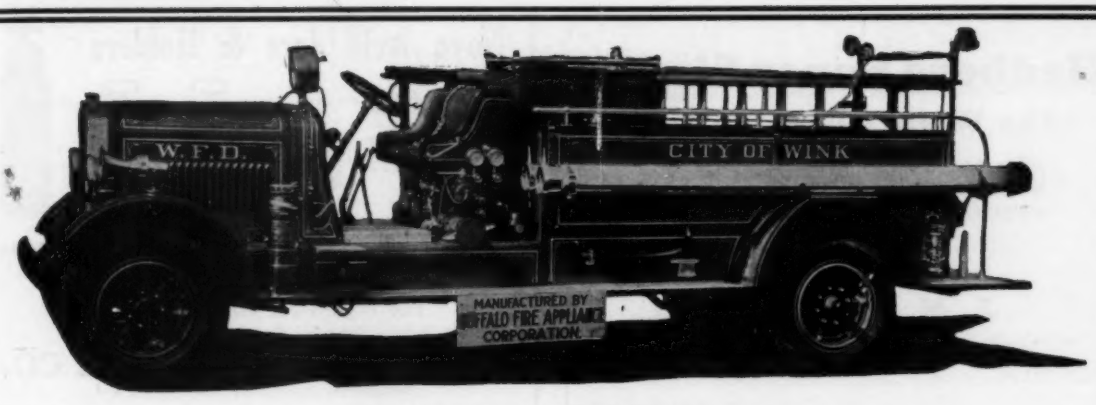
We have a factory at B....., England, capable of handling the manufacture of many articles. The plant covers some thirteen acres and we employ just short of one thousand hands. Many of the largest contracts in this country have been carried out by our company. At present we hold a large number of very important contracts for different governments and municipal authorities, not only here but abroad.

It has occurred to us that you may possibly be able to put some manufacturer in touch with us.

Yours faithfully,
W. E. A.

EDITOR'S NOTE—American manufacturers desiring European distribution, and who would like to get in communication with this correspondent, should address their letters to FIRE ENGINEERING, and the mail will be forwarded.

Rhinelander, Wis., to Receive Pumper—Rhinelander, Wis., is expecting the delivery of a 1,000-gallon Pirsch pumper which it purchased for $11,000.



Buffalo Type 50—500 Gallon Pumper

Buffalo Pumpers are the most highly developed in design, construction and engineering standards and are intended for municipality, community and township fire protection.

Buffalo Pumpers are also noted for their efficiency and their great abundance of reserve power. They are pumpers with stamina and speed. All the above have to be credited for bringing great pumping merits for Buffalo Pumpers.

Buffalo Pumpers are given great and careful attention when under construction at our factory by engineers, both mechanical and designing, who have been in contact with the construction of pumpers for years.

Buffalo Pumpers range from 300 gallon capacity to 1000 gallon capacity.

IF YOU WANT SOMETHING BETTER BUY *"BUFFALO"*

Write for detailed specifications

BUFFALO FIRE APPLIANCE CORP.

44 CENTRAL AVENUE **BUFFALO, N. Y.**

Manufacturers of all types of Fire Apparatus

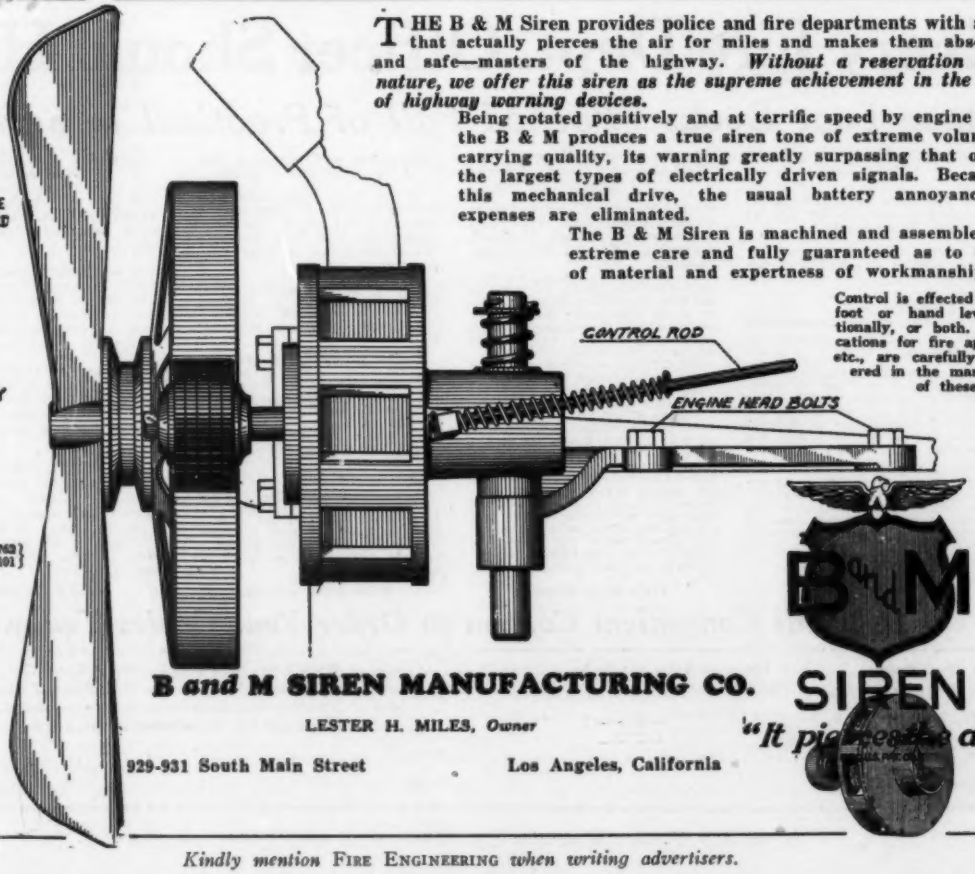
B&M FORD SIREN

MADE TO FIT THE NEW MODEL FORD

PRICE 65.00

COMPLETE WITH DRIVE PULLEY FAN AND BRACKET

PATENTS
{1,566,761 1,566,762}
{1,566,763 1,586,101}
Others Pending



THE B & M Siren provides police and fire departments with a voice that actually pierces the air for miles and makes them absolute—and safe—masters of the highway. *Without a reservation of any nature, we offer this siren as the supreme achievement in the design of highway warning devices.*

Being rotated positively and at terrific speed by engine power, the B & M produces a true siren tone of extreme volume and carrying quality, its warning greatly surpassing that of even the largest types of electrically driven signals. Because of this mechanical drive, the usual battery annoyance and expenses are eliminated.

The B & M Siren is machined and assembled with extreme care and fully guaranteed as to quality of material and expertness of workmanship.

Control is effected through foot or hand levers optionally, or both. Specifications for fire apparatus, etc., are carefully considered in the manufacture of these signals.

B and M SIREN MANUFACTURING CO.

LESTER H. MILES, *Owner*

929-931 South Main Street Los Angeles, California

B and M SIREN

"It pierces the air"

Hedberg Super Sirens

"The World's Best by Test"

offer the world's greatest and most versatile range of choice involving sizes and methods of operation.

Write for descriptive matter showing sirens that have never lost in competition.

J. N. HEDBERG

321-49 W. REED ST.,

SAN JOSE - - - CALIFORNIA

Novo Acid Jars & Holders

of every description stronger than lead and non-corrosive. Used by departments throughout the country.

Chemical Tanks and Lally Quick Opening and Self-packing Top for Chemical Tanks

Lally Improved Fire Hose Couplings, Fire Extinguishers and Charges, Fire Hose and Fire Department Supplies in General

Send for Complete Catalog

LALLY FIRE APPLIANCE CO.

Wilmington Brass Co., Wilmington, Del.

JOHN H. CLAY, INC.

1320 Ridge Ave., Philadelphia, Pa.

Established 1854

Clay Automatic Door Opening Devices for Fire Station Doors Opening either In or Out. Save valuable minutes in getting to fires. Send for Bulletin.

Clifton Salvage Covers

Are made of strong, heavy duck and lapped seams and are designed of such thickness and weight as to be light enough to be handled quickly and rigid enough for the most strenuous service. They are rubberized on both sides with a double coating of a high grade, long life, rubber compound.

CLIFTON SALVAGE COVERS are built to stand the heaviest abuse and are used by many of the large Protective Departments.

May we send you further particulars?

Clifton Manufacturing Company

Jamaica Plain District :: Boston, Mass.

Every Fire Dept. Officer Should Have

These Four Books—*Packed Full of Practical Information*

What Every Fire Fighter Should Know

A 300 page book, fully illustrated, prepared by the Editors of FIRE ENGINEERING.

Contains about everything that is required to give ambitious fire officers a thorough understanding of up-to-date fire fighting, fire protection and fire equipment. Brimful of authoritative data. The following are some of the subjects covered:

Fire departments, how organized, their equipment, and how to determine the apparatus needed. Fire hose, its care and testing. Advantages and disadvantages of different sizes of hose. Fire alarm systems and apparatus. Auxiliary fire appliances.

Fires and how they should be handled. Fire streams. Fire fighting administration. Drills and training. Fire extinguishers. Dangerous oils and chemicals and how they should be handled at fires. And there are many others.

Price $2.65, postpaid.

Questions and Answers for Battalion and Deputy Chiefs

A 210 page book, fully illustrated, by Geo. J. Kuss, former Deputy Chief, New York Fire Department, and Fred. Shepperd, Managing Editor of FIRE ENGINEERING.

A valuable book, not only for candidates for examinations for Battalion and Deputy Chief, but for every member of the department. The only book published which gives detailed methods of operating at large fires and the reasons for each move.

The following are a few of the important topics covered:

Detailed description of the proper procedure in fighting fires: 1. Size-up; 2. Calling of help; 3. Saving of life; 4. Covering exposures; 5. Extinguishing fire; 6. Overhauling. How to test motor fire apparatus. How the following types of fires should be fought: Large department stores, large hotels and rooming houses, large area residential fires, combination stores and apartments, motion picture film exchanges, tall office buildings, wholesale grocery stores and warehouses, group building fires, theatres, schools, factories, etc., and considerable other data.

Price—$2.15, postpaid.

Questions and Answers for Lieutenant and Captain

A 290 page book, fully illustrated, by Geo. J. Kuss, former Deputy Chief, New York Fire Department, and Fred. Shepperd, Managing Editor of FIRE ENGINEERING.

Contains questions asked at promotional examinations in practically every city in the country where civil service examinations are held, with answers.

Includes chapters on Report Writing, How to Answer Examination Questions, Chemistry Examination Questions, Fire Fighting Questions, Overhauling, Ventilation, Fire Prevention, Inspection, Evolutions, Drills, Use of Apparatus, Rescue Work, and in fact all the topics covered by the fire department promotional examinations.

If you are studying for a promotional examination, you need this book, and if you are not studying for examination, this book will nevertheless give you a vast amount of valuable information on up-to-date fire methods.

Price—$2.65, postpaid.

Simplified Fire Department Hydraulics

A 200 page book, fully illustrated, by Fred. Shepperd, Managing Editor of FIRE ENGINEERING.

A complete course of instruction in fire department hydraulics. Designed to prepare fire department officers for hydraulic questions in examinations, such as required of all ranks.

Contains over 150 problems in fire department hydraulics asked in examinations in New York, Chicago, Milwaukee, Seattle, Newark, and a score of other large cities.

Treats fully all departments of fire department hydraulics, including pressure calculations, friction loss, engine and nozzle pressures, range of streams, capacities of engines, discharge from nozzles, hydrants, sprinklers, etc., etc.

Price—$2.15, postpaid.

Use This Convenient Coupon to Order Your Copies Today.

Book Department,
FIRE ENGINEERING,
225 W. 34th St., N. Y. C.

Please send me the books I have checked, for which I enclose money order (or check) for $.....

.....copies of What Every Fire Fighter Should Know ☐
.....copies of Questions and Answers for Battalion and Deputy Chiefs ☐
.....copies of Questions and Answers for Lieutenant and Captain ☐
.....copies of Simplified Fire Department Hydraulics ☐

Name..... Rank.....

Address..... Date.....

FIRE DEPARTMENT ACTIVITIES

Osgood, Ohio, Orders Apparatus—Farmers and village residents of Osgood, Ohio, have contributed towards the purchase of fire apparatus.

Peoria, Ill., Assistant Chief Resigns—Joseph Hamann, assistant chief of Peoria, Ill., has resigned after thirty years service in the department.

Souderton, Pa., Houses Apparatus—An attractive program was arranged for the installation of new fire apparatus at Souderton, Pa., in its house.

Green Bay, Wis., Completes Fire House—An open house has been planned to mark the completion of a new fire station in Green Bay, Wis.

Biddeford, Me., Buys Gas Masks—Following the experience of sulphur fumes at a Portland, Me., fire, Biddeford, Me., has ordered the purchase of gas masks.

Fire Apparatus Delivered to Tylerdale, Pa.—A Boyer apparatus has been delivered to Tylerdale, Pa. It carries two 80-gallon chemical tanks.

Myrtle Beach, Conn., to Buy Pumper—An appropriation of $13,000 has been recommended for the purchase of a 750-gallon pumper for Myrtle Beach, Conn.

Palo Alto, Cal., to Buy Apparatus—Residents of East Palo Alto, Cal., have taken steps towards the purchase of fire apparatus.

San Anselmo, Cal., Passes Bond Issue—San Anselmo, Cal., has approved a $30,000 bond issue, and funds are now available for the purchase of fire apparatus.

Russell, Ohio, to Purchase Pumper—Russell, Ohio, has invited bids for supplying a 500-gallon pumper, delivery of which is stipulated for November.

Former Chief of Lockport, N. Y., Dead—Samuel Cunningham, fifty-seven years old and formerly chief of the fire department in Lockport, N. Y., died in the City Hos-

Corvallis, Ore., to Erect Fire House—Corvallis, Ore., voted to issue $60,000 long time bonds to finance the construction of a new fire station at the rear of the present city hall.

Burned Home to Spite Wife—A man who set fire to a building in Stamford, Conn., said that he wanted to be revenged on his wife who had ordered him out after a quarrel. The man was arrested on arson charges.

Kalama, Wash., Celebrates Anniversary—A banquet was held to mark the fifth anniversary of the Kalama, Wash., volunteer fire department. A 500-gallon pumper was recently purchased by the department and placed in service.

Salt Lake City to Have New Station—Plans are being drawn for a new fire station to be erected in Salt Lake City, Utah. It is hoped to have the new station completed by the end of the year.

Chief May Muster in Bystanders—According to a new Wisconsin law, the chief of a volunteer fire department is given authority to muster in any bystander at a fire if additional help is needed.

Newark, N. J., Sells Old Fire Houses—Two old fire houses in Newark, N. J., were sold at public auction. The two companies housed in these buildings have been moved to a station at High street.

Schuylerville, N. Y., to Form New Force—A new fire department is to be organized in Schuylerville, N. Y., to replace the force that resigned following a quarrel with city officials.

Madison, Wis., to Re-advertise Bids—Because of a deadlock in the council of Madison, Wis., concerning the purchase of fire apparatus, the bids were rejected and a new call for bids issued.

Yonkers to Open Station on Thanksgiving—It is believed that the fire station being constructed in Yonkers, N. Y., will be ready for occupancy by Thanksgiving Day. It is hoped that the building will be completed even before then.

Atwater, Ohio, to Vote on Bond Issue—At the November election, Atwater, Ohio, will vote on the question of an $8,400 bond issue for the purchase of fire apparatus. The necessary amount of signatures to the petition has been obtained.

Oswego, N. Y., to Lay Fire Alarm Cables—New fire alarm cable is to be placed in Oswego, N. Y. The city will use the telephone company's conduit without charge, and the installation will also be made by the telephone company's employees.

Pelham, Ga., to Have Paid Department—Pelham, Ga., voted to institute a paid fire department and to buy fire apparatus. Chief D. W. Brosnan of Albany, Ga., was consulted a number of times, and the change came about after many months of study by the local Chamber of Commerce.

Boston Rescue Company Temporarily Housed—Rescue Company No. 3, which was recently established in Boston, Mass., will be temporarily housed in the station of Company No. 50 in the Charlestown district, until the fire house in Bowdoin Square is completed.

McKee Heads Iowa Firemen—W. A. McKee, Atlantic, was elected president of the Iowa Firemen's Association held in Red Oak, Ia. Other officers elected are J. J. Lynch, Vinton, G. Vander, Milford, and H. C. Reinholdt, Manning, vice-presidents; Paul R. Soener, Independence, secretary, and W. L. Allen, Ames, treasurer.

Oshkosh, Wis., to Install Fire School—A new training school for firemen will soon be inaugurated in Oshkosh, Wis., and changes will also be made in the repair shop. Several firemen will be sent to the Milwaukee school so that they in turn might instruct fellow-members of the department in Oshkosh.

Queens to Have Three New Fire Houses—Within a short time, New York City will open up fire houses in the East Elmhurst, Flushing-Hillcrest and Douglaston sections. The Flushing unit will be completed first, although the exact completion date has not been set. The one in Elmhurst will house Engine 316.

Winona, Minn., Wins at Fire Drill School—Honors for handling hose and ladders at the Northwest Fire School were awarded to Winona, Minn. Many interesting talks were given at the school, including one by David J. Price, of the Department of Agriculture, Bureau of Chemistry and Soils, on "Dust Explosions."

Fire Alarm System of Elmira Improved—A new 12-circuit switchboard, 10-circuit protector board, 8-circuit repeater and fifteen new fire alarm boxes are being installed in Elmira, N. Y., by the Gamewell Company. The original Gamewell system was installed in 1888, rebuilt in 1900 and is now being replaced by modern equipment.

More Fire Prevention Laws Desired—Timothy C. Murphy, chief fire inspector of the Massachusetts Department of Public Safety, recently told a special commission that in his opinion the best method of reducing the state fire loss would be to extend the fire prevention laws of the Boston Metropolitan District to the entire state.

Firemen on Parade Stop to Fight a Blaze—While hundreds of spectators at Mount Carmel, Pa., were wondering what was holding up a division of the fire department parade, members of a visiting company who were opposite a hotel when a fire alarm sounded, ran up ladders to extinguish a chimney fire. After a fifteen-minute delay, the parade continued.

More Men Wanted in Milwaukee—According to the new budget of the Milwaukee Fire Department, requests have been made for six additional firemen and two new mechanics. Chief Peter Steinkellner has asked for $350,000 to finance his new building program. This appropriation will provide for the erection of an administration building to house department offices, the fire inspection bureau and an engine company.

No Free Fire Protection Outside of City—The city council of Olympia, Wash., has determined that communities outside the city limits must pay for fire department service at the rate of $50 for the first hour and $30 an hour for each additional hour, whenever the firemen answer the call. At the present time there are a number of communities without fire departments that are depending upon Olympia for fire protection.

PROPOSED IMPROVEMENTS

Rosemead, Los Angeles Co., Calif.—Chamber of Commerce considering the purchase of fire apparatus, according to reports.

Baldwin Park, Los Angeles Co., Calif.—County Architect was instructed to prepare plans for fire station in Baldwin Park County Fire Protection District, at cost not to exceed $9,500.

Doylestown, Wayne Co., Ohio.—Fire department raising funds for purchase of new equipmentt, according to reports.

Lebanon, Linn Co., Oregon.—The purchase of the proposed new pumper for fire department is being considered.

South Gardiner, Kennebec Co., Maine.—Fire department raising funds for purchase of new piece of apparatus, according to reports.

Lynchburg, Campbell Co., Va.—City soon to have plans read for bids on erection of fire station at Fifth and Church Sts. Estimated cost $50,000. Clark and Crowe, Architects.

Herndon, Fairfax Co., Va.—Fire department to erect a 2-story station, according to reports.

Trumbull, Fairfield Co., Conn.—At recent meeting in Long Hill Fire station resident voted in favor of establishing a fire district in the Long Hill section of Trumbull. Howard F. Randall, Chairman of Committee.

Huntington, Cabell Co., W. Va.—Reports state plans are being made to purchase a rescue car for the fire department. Thomas A. Gilmore, Chief.

American-LaFrance Announces New Apparatus

Announcement of a complete new series of motor fire apparatus is made by the American-LaFrance and Foamite Corporation of Elmira, N. Y. The new line, which is headed by the "Metropolitan," a 1,000-gallon pumper, the Type 75, a 750-gallon pumper and a new line of aerial models, is now in production. Both the Metropolitan and the new aerial trucks, as well as the new city service truck developed by the Company, were features of the motor fire apparatus exhibit at the annual convention of the International Association of Fire Chiefs, recently held in Birmingham, Ala.

Display of American-LaFrance Apparatus at the I. A. F. C. Convention in Birmingham, Ala.

One of the most important features in the new line is a new type cooling system which is very efficient. The system consists of a separate cooling unit made up of a number of tubes with fins attached to header plates on each end, similar to a tubular radiator core. This unit is mounted on a cast aluminum housing with an elbow bolted to each end which, in turn, is bolted to the suction extensions on each side of the pump. Water from the bottom of the radiator enters one end of the housing, circulates around the outside of the finned tubes of the cooling unit, discharging at the other end and hence to the circulating pump on the motor. Cold water, entering the side of the pump through which suction is taken, flows down and through the inside of the tubes and returns to the opposite side from which suction is being taken, thus cooling the water from the circulating system on the outside of the tubes. About fifty gallons of water per minute passes through from one side of the pump to the other and as this water never leaves the suction side of the pump, there is not any loss. Some of the features of this new cooling system are: It is not necessary to open or shut any valves as the system is fully automatic; as hot water continually circulates through the cooling system, the pump is kept warm while enroute to fires; it is possible to use anti-freeze solutions in cold weather without loss.

One of the changes found in the new line is the steering control. This is now located on the left hand side instead of on the right as formerly.

In line with improved steering, four-wheel mechanical brakes of the two-shoe type, fully inclosed, have been adopted throughout the new line. State highway regulations require a stop within thirty-five feet at a speed of twenty miles an hour. The new brakes exceed them. Tests have shown that a fully loaded Metropolitan can be stopped within twenty-two feet at twenty miles per hour.

The use of steel hollow spoke wheels, instead of the usual wood or disc wheels, is another development that has been adopted. Tests have shown that these new wheels will withstand a side thrust of 30,000 pounds. This added strength precludes, to a great extent, the danger of smashed wheels caused by collisions or from contacts with curbs.

All frames on the new line are of pressed steel, heat treated, of the so-called "fish belly" type. They are 3½-inch wide at their widest point; 8-inch deep at their deepest section, and ¼-inch thick. It is interesting to note that the elastic limit of the average rolled steel frame, commonly used, is 30,000 pounds as compared to 90,000 pounds as found on the new frames. Besides added strength, this new type frame gives greater rigidity and eliminates vibration.

The aerial models of the new line incorporate all the advanced features found in the pumpers with the exception, of course, of the cooling system which is not needed. Frames are of the same general design as found in the new pumpers and city service trucks. A unique feature about the aerial frames is that they are the longest pressed steel. heat treated frames which have ever been made in one piece. Despite the fact that these frames are much strongr than their predecessors they are two hundred pounds lighter. The same new steering arrangement is used in the aerials as on other models of the line. In addition, however, a new drop forged heat treated alloy steel I-beam tiller axle with roller thrust bearings in the knuckle pivot has been provided. This makes the work of tiller-man easier in that steering is greatly facilitated. As in the case of other models in the new line, springs have been lengthened and their flexibility increased.

One of the interesting features of the new aerial trucks is that of control which is of one-man type. One man not only can raise the main ladder and revolve the turntable, but the ladder can be "bedded" by one man. He can raise the main ladder in three seconds and lower it in twenty seconds.

In line with the centralization of controls, the spring raising cylinder of the new aerials have been increased in length and strength over their predecessors. All important moving parts in the aerial mechanism are enclosed and operate in oil. This feature not only lengthens the life of the parts, but it eliminates the danger of men being caught in moving parts.

The new arrangement of operating mechanism, makes it possible to approach the ladder and climb it without stepping over shafts, housings, etc. This is an important safety feature, particularly in inclement weather.

Other exterior improvements are found in the tool box, which is now located in a locker just below the pump gauges, and the battery box which has been placed on the opposite side of the tool box. These changes result in greater running board space.

CONVENTION DATES

May 12, week of, 1930—NATIONAL FIRE PROTECTION ASSOCIATION. 34th Annual Meeting, Atlantic City, N. J. 1931 Convention probably to be held in Toronto, Can. Managing Director, Franklin H. Wentworth, 60 Batterymarch St., Boston, Mass.

May 14, 1930—DEL-MAR-VA. VOLUNTEER FIREMEN'S ASSOCIATION. 1st Annual Convention, Cambridge, Md. Secretary, J. Emory Parks, Cambridge, Md.

June, 1930—EASTERN ASSOCIATION OF FIRE CHIEFS. 3rd Annual Convention, Baltimore, Md. (Exact date to be decided later.) Secretary, Ex-Chief T. Howell Johnson, Room 602, Chamber of Commerce Bldg., Newark, N. J.

May 26-29, 1930—KANSAS STATE ASSOCIATION OF FIRE CHIEFS, STATE FIREMEN'S ASSOCIATION and FIRE SCHOOL. Respectively, 14th, and 43rd Annual Convention and 2nd Annual Fire School, Salina, Kan. Secretary, Chief K. D. Doyle, Wamego, Kan. Secretary Firemen's Short Course Committee, E. J. Stewart, Kansas Insp. Bureau, 701 Jackson St., Topeka, Kan.

Sept. 24-25, 1930—MISSOURI STATE FIREMEN'S ASSOCIATION. Annual Convention, Trenton, Mo. Secretary-treasurer, M. J. Mulvoy, St. Louis, 3500 S. Grand Boulevard, St. Louis.

The Warning Shriek of a Siren!

A Flashing Red Light!

—And Traffic Makes Way for the Fire Department

Down the street rushes the fire department. Traffic must stop—*and it does.* The streets must be cleared—*and they are.* For the Harrington-Seaberg Signal has sounded the warning with its shrill siren blast and flashing red "STOP" light.

Are the congested areas in your city equipped with Harrington-Seaberg Warning Signals? Cities of every size the country over find them incomparable for those quick-action moments that come so unexpectedly.

Sturdy, faultless construction is your guarantee of dependability and durability. Write for descriptive literature.

Our Engineering Staff will be glad to offer suggestions for the solution of your traffic problems.

We also manufacture automatic and hand operated time limit switches to use with the traffic warning signals. Shall we send you detailed information?

EAGLE SIGNAL SALES CORPORATION
Subsidiary of Gamewell Company
DISTRIBUTORS OF
HARRINGTON-SEABERG PRODUCTS
Dept. G, MOLINE, ILLINOIS

The Burrell All Service GAS MASK

The Standard for the Fire Fighters of America

The Burrell All Service Gas Mask is the only mask approved by the United States Government for complete protection against Carbon-Monoxide, Ammonia and every known poisonous gas. Write for Bulletin No. 121.

Mine Safety Appliances Co.
Braddock Ave & Thomas Blvd. Pittsburgh, Pa.

BRAXMAR BADGES

Standard for Fifty Years

1879

1929

No. 882-F

	One	More Than One
Gold Filled	$5.00	$4.50
Silver	4.50	4.00
Gold Plate	1.50	1.25
Nickel	1.00	.75

C. G. BRAXMAR CO.
242 West 55th St., New York

The Clark Oxygen Carbon Dioxide INHALATOR

The CLARK is an improved Inhalator equipped with Breathing Indicators that act as a constant guide in giving the Oxygen Carbon Dioxide in the treatment of Asphyxia.

The supply of the gas to the victim is automatically arranged and two victims can be treated simultaneously if necessary.

To operate it is only necessary to open a valve, apply a mask, and watch the Indicators.

See this "Better" Inhalator at the International Fire Chiefs' Convention
Birmingham, Ala.

McDonald Engineering Corp.
220 Varet Street Brooklyn, N. Y.

FALSE ALARMS

SO SHALL YE ALL

The candidate was being tested on his knowledge of current events for it was felt that a man who is to speak at clubs and schools and who is to meet the prominent men of the city, must be well versed in such matters.

To the questions: State the number of the last amendment added to the U. S. constitution, and tell for what the amendment provides, the candidate wrote the following reply:

"The nineteenth amendment: equal suffrage—the women have a right to suffer as well as the men."

TIME AND PLACE

After the men came back from the fire, had washed up and put things away, most of the morning had gone. It was 11:30, and the chef for the day hurried to the butcher for provisions. He was late and as he rushed into the shop he shouted:

"Can't you wait on me? Two pounds of liver. I'm in a hurry."

"Sorry, Mike, but you see there are two or three ahead of you. You surely don't want your liver out of order."

Because of the recent stock slump many a man went back to his wife.

PERFECTLY AGREEABLE

Most every company has some member who is not happy unless he has a story to tell that he had heard from So and So who in turn had been told by Mr. ..... and so ad infinitum.

Hardly had this pest reached the dormitory when he shouted:

"I've just heard the most awful piece of scandal."

The one nearest him was not disturbed.

"I thought you had. You looked so happy when you came in."

That guy's so lazy he can't decide whether to stay in bed all morning or to get up early so he'll have a longer day to loaf.

FORGOT HIS MISSION

Before entering the department, Sullivan was in the plumbing game. So when a leak was discovered in the captain's bathroom, he was asked to try and fix it. Another fellow was rushed upstairs to help.

Sullivan was annoyed at his helper.

"Hey there, Caruso, stop your singing. Remember you are mendin' a bath, not takin' one."

A wonderful chicken dinner—an egg sandwich.

AMPHIBIAN

The chief, responding to a fire in a light roadster, struck a rock in the center of the road, and the car turned over. Up the road was a garage, and the chief rushed there for assistance.

"Say, can you come with me at once, my car has turned turtle."

The mechanic kept on working.

"This is a garage, not an aquarium," he replied.

"Say, where are you going with that fire hydrant?"

"I'm taking it home for a souvenir."

"Souvenir of what?"

"My first accident."

ON EXHIBITION

Every so often, a member of the fire department gets the mating urge. Jerry, as soon as his work was done, rushed to call on his girl.

He took her hand in his and gazed proudly at the engagement ring he had placed on her fair finger only two days before.

"Did your friends admire it?" he inquired tenderly.

"Thev did more than that, Jerry. Two of them recognized it."

When telling a joke, it is best to make it as short as possible, because if you stretch it out you give the listener time to think of one to tell you.

A fireman had been unsuccessful in the hydraulic examination. That accounted for the following drug store label on his text book:

"Poison. Not to be taken internally."

COLORFUL, ANYWAY

He had been asked to take the visitor to the train, but it seemed a very long time before the driver came back to the station. When he did return, the chauffeur had a most solemn look.

"How'd you get the grease on your face?" asked the officer.

"Well, coming back from the station the car broke down, and I had to fix it."

"Since when do you use red grease for the car."

When asked to name the most outstanding contribution of chemistry to the world, a student replied, "Blondes."

I SPOSE IT ISN'T RIGHT TO KEEP HIM WAITING BUT -
THEY SAID THE FIRE WAS AT THAT GOOD LOOKING YOUNG LAWYER'S HOUSE. I WOULDN'T THINK OF GOING LOOKING LIKE THIS AND BESIDES HE CUT A DATE ON ME ONCE, TOO!
The Girls Prepare To Answer the Alarm.
$1.00 A POUT OR $ 2.00 A PAIR
NOW, THAT'S A REASONABLE PROPOSAL ?
The Flapper Fire Chief Asks For Bids On Hose.
AND REMEMBER - NO LIPSTICKS IN THIS DEPARTMENT !
One Of The Hard Boiled Hardened Girls, Eh ?
Lady Firemen Show Their Stuff In The Drill Yard !

Drawing by "Art" Espey

According to a News Item, New York City Has Lady White Wings—Will it be Female Firemen Next?

BI-LATERAL FIRE HOSE

THE BI-LATERAL FIRE HOSE CO.

Canal St. Station
110 North Franklin St.
Chicago

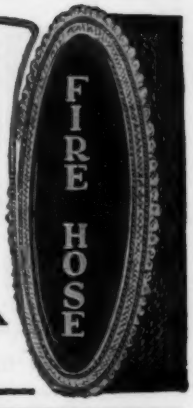
It is easy to explain why Bi-Lateral Fire Hose is the only successful improvement made in the construction of hose which permits it to be flattened on the modern apparatus without causing rapid aging of the rubber at the points of fold.

Send for descriptive matter.

Baker Fabric

Woven and lined to flatten and fold easier, closer and with least injurious effects. Mass-woven to combine maximum strength with flexibility. Write for details.

MANUFACTURED EXCLUSIVELY BY
HEWITT - GUTTA PERCHA
RUBBER CORPORATION
BUFFALO, N. Y.
(Also makers of single and double jacket hose)



when!

You are interested in Fire Fighting Equipment consult:

BOYER

Builders of equipment to meet your requirements.
Specializing in Apparatus for Rural Fire Fighting.

BOYER FIRE APPARATUS COMPANY
Logansport, Indiana

Fire Fighting Equipment

The quality of Pirsch fire fighting equipment is assured by more than seventy years of manufacturing experience. The Pirsch line is complete, chemical engines, ladder trucks, pumpers and Pirsch trussed fire ladders. Write.

PETER PIRSCH & SONS CO.

Factory and Home Office
Kenosha, Wisconsin

Eastern Office
5 Beekman St., New York, N. Y.

JACOB REED'S SONS

Founded 1824 by Jacob Reed

FIREMEN'S UNIFORMS

Thoroughly tailored of especially selected fabrics. Uniforms that look well, wear well and that will give entirely satisfactory service.

Reed's Uniforms are most economical because they represent full value for the amount expended.

Write for catalog and prices.

1424-1426 Chestnut St., Philadelphia, Pa.

THE SHIFT COUPLER

Built to
CONNECT and DISCONNECT instantly!
Any size hard suction
Years of Service Prove it the Best

National Standard Threadless Coupling Corp.
215-217 Beach 122 St., Rockaway Park, N. Y.

Always ready for instant use.

For Personal Safety use

DONTFEAR

Smoke and Fume Respirators

Positive protection against smoke, fumes and gases.

Price $5, Goggles $1 extra; Canisters 50 cents

Send for catalogue.

Don'tfear Mask Co.

654 Madison Avenue, New York, N. Y.

ROTARY PUMPS
FIRE HYDRANTS
FIRE APPARATUS

Waterous (Dependable)

Send for our Complete Catalog
Agents in Principal Cities

WATEROUS COMPANY

St. Paul, Minnesota

Please mention FIRE ENGINEERING *when writing advertisers.*

58 Questions and Answers on Foam and its uses in a pocket size non-technical booklet. For free copy address

AMERICAN FOMON CO.
INCORPORATED
"Fomon—Fire Out"
1005 Drexel Building Philadelphia, Pa.

BODY GUARD
FIRE FIGHTERS CLOTHING

GIVES real protection and comfort in any weather and at any kind of fire. Designed to permit freedom of action, eliminating cumbersome excess weight. Made of materials that withstand the hardest kind of usage. Bodyguard apparel is used by Firemen everywhere.

BODY-GUARD BRAND

THE BODY GUARD MANUFACTURING CO.
ST. JOSEPH - - MISSOURI

FIRE DEPARTMENT LADDERS

Made from carefully selected, straight grain, well-seasoned Oregon Pine. Strong, dependable highly finished, well-equipped and ironed.

Write us when interested.

COMBINATION LADDER CO., INC.
381 Fountain Street Providence, R. I.

MORSE
FIRE BOAT EQUIPMENT
Invincible and Callahan Nozzles
Fire Department Supplies
are in use throughout the country and giving unsurpassed service.
Every fire official should be fully acquainted with Morse equipment and have our catalog and other descriptive literature on file for ready reference whenever considering the purchase of new equipment.
You will find that it pays.
Write for Catalog
Andrew J. Morse & Son, Inc.
221 High St. Established 1837 Boston, Mass.

Left to right—A.B.C. Running Board Plate, Double Male Bronze Lug Type Nipple, Double Female Swivel Connection.

You Will Find A.B.C. Bronze Fittings Unexcelled in Workmanship and Material

Trade Mark A·B·C Since 1900

Therefore, be sure to get prices from us before buying your next supply. Also when in need of fire hose, hose expanders, extinguishers, roof manifolds . . . or any type of fire department nozzles, hydrant connections, hydrant gates, hose valves, siamese connections, wrenches and other tools, hose racks and reels, and other similar equipment.

Send Now for Catalogs!

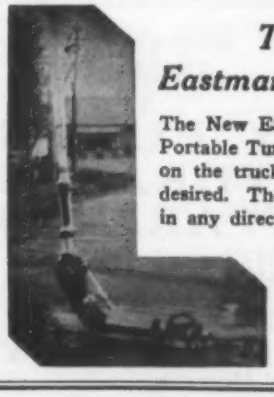
The A.B.C. Fire Prevention Mfg. Company
300 Hudson St., New York City

RENSSELAER "COREY" FIRE HYDRANTS

The **Corey** Fire Hydrants as built by us are the only **Genuine Corey Fire Hydrants** manufactured, and they conform to the standard specifications of the American Water Works Association.

Ask for Catalogue

RENSSELAER VALVE CO.,
TROY, N. Y.



The New Eastman Deluge Gun

The New Eastman Deluge Gun is a Portable Turret Pipe that can be used on the truck or ground, as may be desired. The stream can be operated in any direction by one man.

Samuel Eastman Co.
Concord, N. H.

Saves time - *and costly hose*

No. 1. (Capacity 3 to 7 tons; weight, each, 72 lbs.)

No. 2. (Capacity 3 to 12 tons; weight, each, 118 lbs.)

Complete information and Prices on request.

It's often necessary to move apparatus at a fire. Automobile traffic hates to be held up by a line of hose stretched across the right of way.

Why ruin your hose by driving over it? Or waste valuable time cutting off and disconnecting?

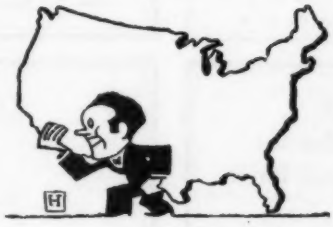
The Wausau Protector is a big time and money saver—easy to handle and carry. Order a set today, or write us for particulars

Wausau Fire Hose Protector Co.
1520 Harmon Place, Minneapolis, Minn.

Your Catalog Page

Fire Protection Equipment and Supplies

1 Acid Siphons.
2 Adaptors for Changing Hydrant Threads.
3 Acid Jars and Rings.
4 Aerial Ladders, Detachable.
5 Aerial Trucks.
6 Alarms, Siren, Electric.
7 Alarm Systems, Industrial.
8 Alarm Systems, Municipal Telegraphic.
9 Alarms, Thermostatic.
10 Asbestos Clothing.
11 Badges, Insignias, Buttons, etc.
12 Banners, Trumpets, etc.
13 Battery Jars.
14 Battery Zincs for Fire Alarm Batteries.
15 Bells, Fire Alarm, Municipal
16 Body Equipments.
17 Boxes, Gongs, Reels, Registers, Fire Alarm.
18 Brakes, Air.
19 Brake Linings.
20 Brooms, Fire.
21 Building Materials, Fire Retardant.
22 Caps, Firemen's.
23 Chains, Non-Skid Fire Apparatus.
24 Chassis for Fire Apparatus.
25 Chemical Engines and Tanks.
26 Chimney Cleaning Compounds.
27 City Service Trucks.
28 Coats & Suits, Firemen's Quick Hitch.
29 Combination Chemical & Hose Cars.
30 Cutting & Welding Equimpent Blow Torch.
31 Cutting & Welding Equipment, Electric.
32 Deluge Sets.
33 Door Openers, Fire Station, Automatic.
34 Extinguishers, Calcium Chloride.
35 Extinguishers, Carbon Dioxide.
36 Extinguishers, Soda-Acid.
37 Extinguishers, Carbon Tetrachloride.
38 Extinguishers, Foam.
39 Extinguishers, Powder.
40 Fire Boat Nozzle Equipment.
41 Fire Department Supplies, General.
42 Fire Exit Devices, Door Opening.
43 Fire Alarm Posts.
44 Fire Escapes, Portable.
45 Fire Escapes, Rigid.
46 First Aid Equipment.
47 Flare Lights.
48 Flashlights, Hand.
49 Foam Liquid for Extinguishers.
50 Gas Masks and Respirators.
51 Gas & Smoke Helmets.
52 Gasoline & Oil Handling Equipment.
53 Goggles, Firmen's.
54 Helmets, Metal, etc.



Help Yourself!

Whenever you are in the market for new equipment you naturally want to get complete information from all reliable manufacturers before you place the orders for your department.

This page is a feature of every issue to make it convenient for you to get all this information without cost to you and without placing you under any obligation whatever to buy from any particular manufacturer.

You only have to run down the list of equipment and mail in the coupon below with your name and address and the numbers that indicate what you are interested in and we will then have the leading manufacturers of this equipment send you complete information direct—so why not let us help you get what you want? We are glad to be of service. Help yourself.

Fire Protection Equipment and Supplies

55 Hose Carts, Reels & Racks.
56 Hose Clamps.
57 Hose, Fire.
58 Hose, Chemical.
59 Hose Holders.
60 Hose Jackets.
61 Hose Standardization Tools.
62 Hydrant Draining Pumps.
63 Hydrants, Fire.
64 Jacks for Fire Trucks.
65 Jacks, Shoring & Prying.
66 Ladders, Fire.
67 Lightning Arresters.
68 Motorcycles, Fire Dept. Equipped.
69 Nets, Life.
70 Nozzles, Pipes & Misc. Brass Goods.
71 Packings, Pumps.
72 Pads, Pole Hole.
73 Paints, Fire Resisting.
74 Priming Ether, Motor.
75 Pumping Cars, Standard.
76 Pumping Cars, Foam.
77 Pumps, Fire Apparatus.
78 Pumps, Fire Service, Stationary.
79 Pumps, Portable for Fire Protection.
80 Record Books, Fire.
81 Relief Valves.
82 Reviving Apparatus, Oxygen.
83 Rubber Clothing.
84 Searchlights.
85 Shingles, Fire Retardant.
86 Shirts, Firemen's Special.
87 Sirens, Apparatus & Chiefs' Cars.
88 Sliding Poles.
89 Soda & Acid Chemicals.
90 Spark Plugs, Fire Apparatus & Motorcyles.
91 Squad and other Auxiliary Cars.
92 Sprinkler Head Shut-Offs.
93 Sprinkler Supervisory Service.
94 Sprinkler Systems, Automatic, Foam.
95 Sprinkler Systems, Automatic, Water.
96 Starters, Fire Apparatus, Automatic, Air.
97 Steam Fire Engines.
98 Tarpaulins & Fire Blankets.
99 Tetrachloride Chemicals.
100 Thawing Equipment, Hydrant.
101 Tires, Fire Apparatus, Pneumatic, Solid, Cushion and Non-Skid.
102 Tractors.
103 Traffic Clearing Systems.
104 Triple Combination Pumping Cars.
105 Uniforms.
106 Water Towers.
107 Wheels, Cushion.
108 Whistles, Fire Alarm, Compressed Air
109 Whistles, Fire Alarm, Steam.
110 Whistles, Fire Apparatus.
111 Wrecking Trucks.

TEAR OFF HERE

FIRE ENGINEERING, 225 West 34th St., New York City.
As a fire protection official I should like to have descriptive literature and complete information mailed to me, without cost or obligation, on the equipment indicated by the following numbers:

Date.....

Nos. ..... **Name** .....

Nos. ..... **Position** .....

Nos. ..... **Street** .....

Nos. ..... **City and State**.....

For Information on Any Equipment Not Listed, Write on This Page or Use Separate Sheet. 11-13

MAXIM

All Types

All Sizes

MAXIM dependable equipment gives the service demanded of MAXIM apparatus.

Send for complete information.

MAXIM MOTOR COMPANY, Middleboro, Mass.

Metropolitan Sales Agents:
The Woodhouse Manufacturing Co., 156 Chambers St., N. Y.

EDDY
Fire Hydrants

Are given preference by so many fire protection and water works men because they know that more than half a century of experience go into their manufacture and they embody valuable and exclusive features.

Write for the Facts

EDDY VALVE CO.
Waterford, N. Y.

James B. Clow & Sons, Chicago Agents

The High Efficiency of HALE Rotary Pumps is due to:

1 The form of the patented Rotor Tooth.
2 Automatic Packing.
3 Four bearing pump shafts.
4 Stainless steel pump shafts.

The design of Hale pumps has been perfected through fifteen years of active experience, and has resulted in a rugged, highly efficient product.

HALE FIRE PUMP CO., INC.
CONSHOHOCKEN, PA.

Manufacturers of Rotary Fire Pumps.

Fire Alarm Signals
Water Meters
Compounding Valves
Stops
Water Pressure Regulators

Presses for Lining Service Pipe with Cement

Union Water Meter Co., Worcester, Mass.
Incorporated 1868

Quick-Acting Reliable

Anderson-Hale Improved

FIRE STATION DOOR OPENERS

Over 1,300 sets of Anderson-Hale Fire Station Door Openers are in successful use. They provide simple, durable, quick-acting doors that open inward. No obstruction to sidewalk. Attractive in appearance, cannot sag, closes tight, excludes cold, gives clear opening.

Opens from driver's seat or from floor. Many repeat orders from users.

Write for complete information.

The Anderson Coupling & Fire Supply Co.
Mfrs. Motor Fire Equipment and Fire Supplies
Kansas City, Kansas

LARKIN Fire Department Supplies
in Service Wherever Fires Are Fought

Our general line of equipment includes every fire department supply of merit.

Larkin shut off nozzles alone are in service in over 5,000 fire departments in U. S. and Canada.

Give us an opportunity of quoting on your next requirements. Let us send you our general catalog.

THE LARKIN MANUFACTURING CO.
Established 1898 DAYTON, OHIO

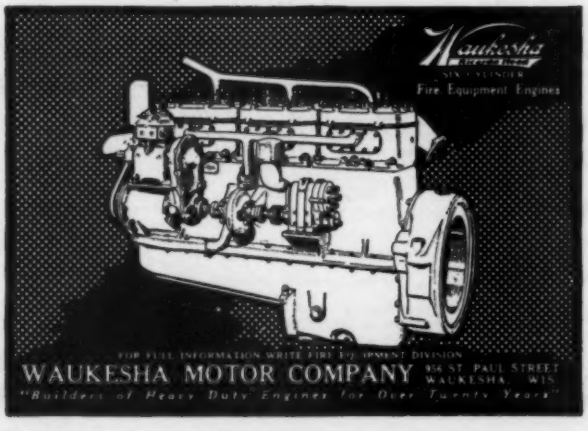
New Victor Gas and Fume Mask

Better Rubber. Longer Life. Better Fitted. Moulded to Fit the Face. Better Vision. Renewable Lenses. Better Air. Better Work. Low Prices. High Quality.

Over 5,000 Victor Gas Masks in Service
Full Line Fire Dept. Supplies and Equipment
New 43 Edition Catalog on Request

The Woodhouse Mfg. Co., Inc.
156 Chambers St., New York

D. A. Woodhouse, Pres. and Gen. Mgr. George J. Kuss, Vice-Pres. and Treas.


Waukesha
SIX-CYLINDER
Fire Equipment Engines
FOR FULL INFORMATION WRITE FIRE EQUIPMENT DIVISION
WAUKESHA MOTOR COMPANY 956 ST. PAUL STREET WAUKESHA, WIS.
"Builders of Heavy Duty Engines for Over Twenty Years"

It will help if you will mention FIRE ENGINEERING *when writing advertisers.*

ADVERTISING INDEX

Advertising Pays—in Fire Engineering

	PAGE
Ahrens-Fox Fire Engine Co.	1033
A. B. C. Fire Prevention Mfg. Co.	1066
American Fomon Company, Inc.	1066
American-LaFrance & Foamite Corp.,	*Inside Front Cover*
Anderson Coupling & Fire Supply Co.	1068
B. & M. Siren Mfg. Co.	1059
Bi-Lateral Fire Hose Co.	1065
Body Guard Mfg. Co.	1066
Boyer Fire Apparatus Co.	1065
Braxmar Co., C. G.	1063
Buffalo Fire Appliance Corp.	1059
Clay, Inc., John H.	1060
Clifton Mfg. Co.	1060
Combination Ladder Co.	1066
Darling Valve & Mfg. Co.	1034
Don'tfear Mask Co.	1065
Eagle Signal Sales Corp.	1063
Eastman Co., Samuel	1066
Eddy Valve Co.	1068
Eureka Fire Hose Mfg. Co.	*Front Cover*
Everson Ross Co.	1070
Fabric Fire Hose Co.	1035
French & Hecht	*Back Cover*
Fulton Bag & Cotton Mills	1070
Gamewell Co.	1036
Hale Fire Pump Co.	1068
Harrington-Seaberg Corp.	1063
Hedberg, J. N.	1060
Hewitt-Gutta Percha Rubber Corp.	1065
Information for Buyers	1067
Lally Fire Appliance Co.	1060
Larkin Mfg. Co.	1068
Mack Trucks, Inc.	*Inside Back Cover*
Maxim Motor Co.	1068
Mine Safety Appliances Co.	1063
Morse & Son, Inc., Andrew J.	1066
McDonald Engineering Corp.	1063
National Standard Threadless Coupling Corp.	1065
Peter Pirsch & Sons Co.	1065
Reed's Sons, Jacob	1065
Rensselaer Valve Co.	1066
Stanley & Patterson, Inc.	1031
Sterling Siren Fire Alarm Co., Inc.	1070
Union Water Meter Co.	1068
Waterous Company	1065
Waukesha Motor Co.	1068
Wausau Fire Hose Protector Co.	1066
Wood & Co., R. D.	1070
Woodhouse Mfg. Co.	1068

Are You a Subscriber?

If you are not already on our regular subscription list to receive every issue of this magazine, issued every other Wednesday, we are sure you'll agree that you ought to fill out at once the blank below. It will bring you 26 wonderfully interesting numbers for only $3—payable any time within the next thirty days.

Do your Stuff along these lines:

Name .....

Position .....

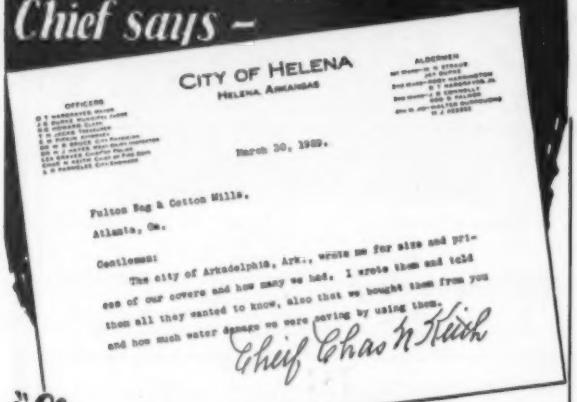
Address .....

YES or NO?

It's up to you!

Just fill out and mail to Fire Engineering, 225 West 34th St., New York

Another Prominent Fire Chief says –



CITY OF HELENA
HELENA, ARKANSAS

March 30, 1929.

Fulton Bag & Cotton Mills,
Atlanta, Ga.

Gentlemen:

The city of Arkadelphia, Ark., wrote me for size and price of our covers and how many we had. I wrote them and told them all they wanted to know, also that we bought them from you and how much water damage we were saving by using them.

Chief Chas N Reich

"Shuredry" Waterproofed SALVAGE COVERS

More evidence of the importance of "Shuredry" Salvage Covers to every Fire Department, no matter where located.

Not only do Shuredry Covers cost less than rubber, they are much easier to handle and spread, and do not peel or crack when folded and stored.

Write our nearest plant for samples and prices.

Fulton Bag & Cotton Mills

Brooklyn Dallas St. Louis Minneapolis
New Orleans **Atlanta, Ga.** Kan. City, Kan.

Manufacturers Since 1870

STERLING
No. 12

TRAFFIC ALWAYS OBEYS A STERLING NO. 12

Municipal traffic conditions grow more congested daily, but the congestion disappears like magic when drivers hear the STERLING No. 12.

Its unmistakable tone warns them the fire department is coming . . . the way is cleared for it. The STERLING No. 12 is giving service the world over.

Inclosed high speed ball bearing motor; balanced five inch fan; micrometer clearances; complete with bracket, cord and switch . . . $45.00 f.o.b. Rochester, N. Y.

Write for Bulletin 660

Sterling Siren Fire Alarm Co., Inc.
61 Allen Street Rochester, N. Y.

Newest Designs ***Highest Quality***

Specializing in badges and insignia equipment for every fire department need, the EVERSON-ROSS line, known for its fine quality of materials and workmanship, offers a large, up-to-date selection to suit the most discriminating taste. Before you buy—

Write for our Fire Department Badge Catalog No. 32.

EVERSON-ROSS CO.
88 Chambers Street, New York

MATHEWS

(Reg. U. S. Pat. Off.)

FIRE HYDRANTS

for

DOMESTIC

and

HIGH PRESSURE Service

NOTE—

The positive waste value.

All operating threads are dry, being above the stuffing-box.

No toggles, no small, quick-wearing parts.

All moving parts are bronze or bronze-bushed.

The outside casing permits replacing a two-way standpipe with a steamer and two-way standpipe without digging up the ground.

An easily installed EXTENSION SECTION readily adapts them to new grade.

VALVES and BOXES
CAST IRON PIPE
Sand-Cast or "Sand-Spun"
FITTINGS

R. D. WOOD & CO., Phila., Pa.

Mack ORIGINAL FEATURES WIN OUTSPOKEN ADMIRATION AT BIRMINGHAM

and once more clearly demonstrate the superior developments of *Mack Progressive Fire Engineering.*

Complete Mack-Built Engine and Chassis

Six-Cylinder Engine—enclosed cooling system and thermostatic control
Full Pressure Lubrication
Left Hand Drive, Center Control
Four-Speed Transmissions
Dual Reduction or Hypoid Final Drive
Full Floating Live Rear Axles
Four-Wheel Brakes, Vacuum Booster Operated

Pumping Equipment

Fire Pumps for All Conditions—
Pressure Volume Centrifugal or
Positive Displacement Rotary Type
Absolute Fire Stream Pressure Regulator—
acting through main throttle of engine

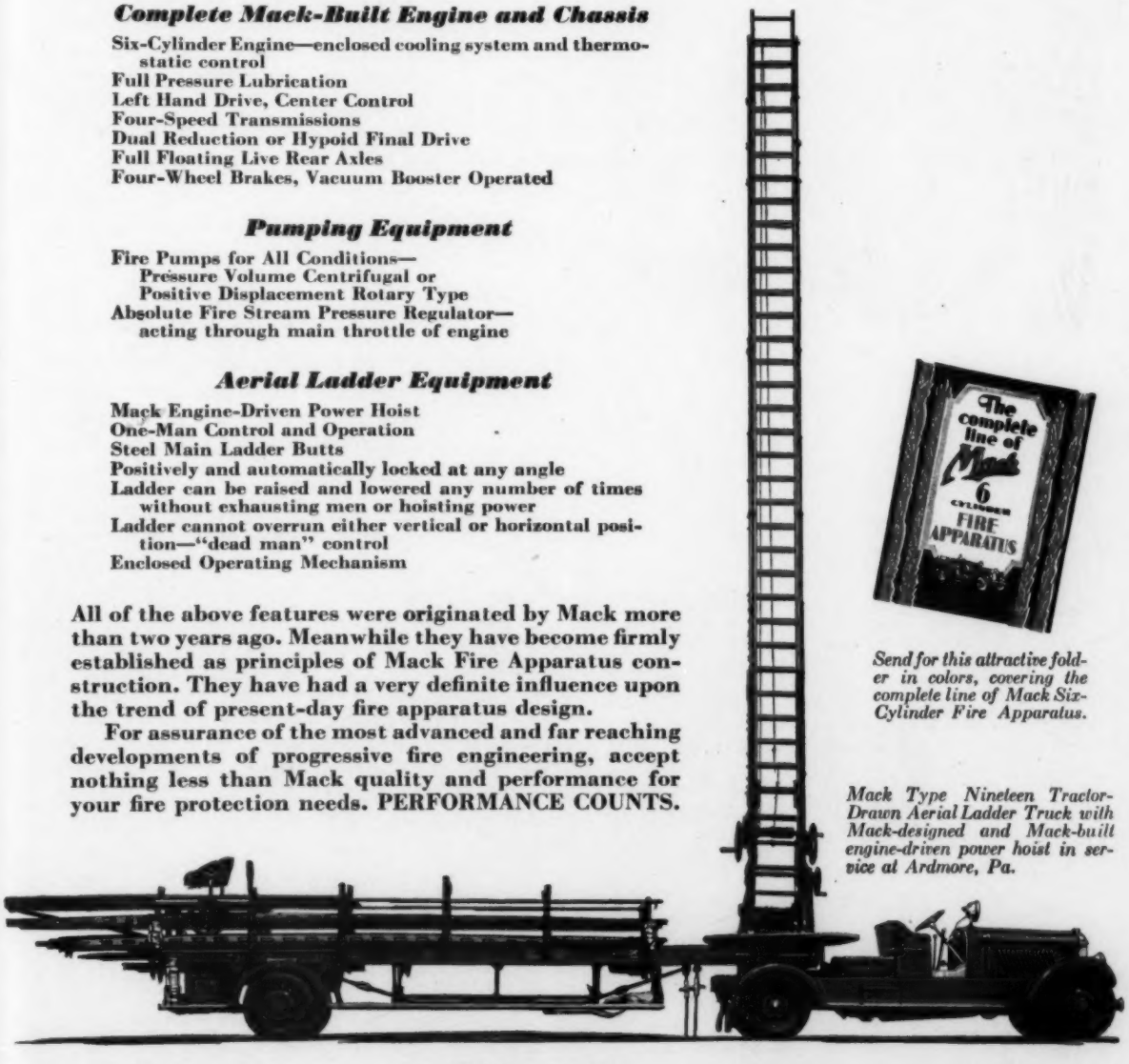
Aerial Ladder Equipment

Mack Engine-Driven Power Hoist
One-Man Control and Operation
Steel Main Ladder Butts
Positively and automatically locked at any angle
Ladder can be raised and lowered any number of times without exhausting men or hoisting power
Ladder cannot overrun either vertical or horizontal position—"dead man" control
Enclosed Operating Mechanism

All of the above features were originated by Mack more than two years ago. Meanwhile they have become firmly established as principles of Mack Fire Apparatus construction. They have had a very definite influence upon the trend of present-day fire apparatus design.

For assurance of the most advanced and far reaching developments of progressive fire engineering, accept nothing less than Mack quality and performance for your fire protection needs. PERFORMANCE COUNTS.

Send for this attractive folder in colors, covering the complete line of Mack Six-Cylinder Fire Apparatus.



Mack Type Nineteen Tractor-Drawn Aerial Ladder Truck with Mack-designed and Mack-built engine-driven power hoist in service at Ardmore, Pa.

Fire Engine Division
25 Broadway
New York City

Mack Trucks, Inc.

More than 100 direct factory branches are equipped to service Mack Fire Apparatus in any emergency.

TRUCKS • BUSES • FIRE APPARATUS • RAIL CARS • LOCOMOTIVES

Improved Portability

THIS chemical fire extinguisher made by the Fyr-Fyter Co., comes equipped with French & Hecht Steel Wheels. French & Hecht is a distinct type of steel wheel. Many of its important features of construction and refinements are exclusive. French & Hecht Wheels offer many practical advantages for portable equipment of all kinds.

1st—They reduce draft or rolling resistance to the minimum.

2nd—They are designed for the most efficient type of bearing.

3rd—They are built to withstand all strain put upon them in service and to remain permanently true and rigid beyond the life of the machine.

4th—French & Hecht construction assures not only a stronger and more durable wheel, but a wheel so exact mechanically that it adds to the efficiency of the machine itself.

The vast specialized facilities of French & Hecht enable them to solve any wheel problems and to produce these at a lower cost than the average manufacturer can produce them himself. Any information concerning wheels will be gladly furnished. Write.

Each spoke is forged in the hub while hot, forming a head on the inside and a shoulder on the outside, similar to a boiler rivet.

The spokes are expanded in the rim with shoulders on the inside and the ends are riveted on the outside.

There can be no other Steel Wheels like French & Hecht because the essential features of construction are exclusively French & Hecht.

FRENCH & HECHT, Inc., Davenport, Iowa, Springfield, Ohio

Wheel Builders Since 1888

FRENCH & HECHT

STEEL WHEELS